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1927-28

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THE CALENDAR FOR 1927–28

First Term

		1927	
Sept.	16	Friday	University entrance examinations begin.
Sept.	26	Monday	Academic year begins. Registration of new students.
			All special students in the College of Agriculture must first present themselves at the office of the Secretary, Roberts Hall, unless permission to register has previously been sent to them by the Registrar.
Sept.	27	Tuesday	
		9–12 a. m.	Registration of new students.
		1–5 p. m.	Registration of old students.
Sept.	28	Wednesday	Registration of old students.
Sept.	29	Thurs. 8 a.m.	Instruction begins.
Oct.	21	Friday	Last day for payment of tuition.
Nov.	9	Wednesday	Registration of winter-course students.
Nov.	24–26		Thanksgiving recess.
Dec.	17	Sat. 1 p. m.	Instruction ends in regular and winter courses. } Christmas recess.
		1928	
Jan.	2	Mon. 8 a. m.	Instruction resumed in regular and winter courses. } Christmas recess.
Jan.	11	Wednesday	Birthday of Ezra Cornell. Founder's Day.
Jan.	30	Monday	Term examinations begin.

Second Term

Feb.	10	Friday	} Registration of all students.
Feb.	11	Saturday	} Registration of all students.
Feb.	13	Mon. 8 a. m.	Instruction begins in regular courses.
Feb.	13–18		Farmers' Week.
Feb.	17	Friday	Instruction ends in winter courses.
Mar.	5	Monday	Last day for payment of second-term tuition.
Mar.	31	Sat. 1 p. m.	Instruction ends. } Spring recess.
Apr.	9	Mon. 8 a. m.	Instruction resumed. } Spring recess.
June	4	Monday	Term examinations begin.
June	18	Monday	Sixtieth Annual Commencement.

STAFF OF INSTRUCTION, RESEARCH, AND EXTENSION

Livingston Farrand, A.B., M.D., L.H.D., LL.D., President of the University.
Albert Russell Mann, B.S.A., A.M., Dean of the College of Agriculture.
Cornelius Betten, Ph.D., D.Sc., Director of Resident Instruction.
Carl Edwin Ladd, Ph.D., Director of Extension.
Frank Barron Morrison, B.S., Director of Experiment Stations.
Olin Whitney Smith, B.S., Secretary.
Willard Waldo Ellis, A.B., LL.B., Librarian.
George Wilson Parker, Managing Clerk.

Isaac Phillips Roberts, M.Agr., Ex-Director, Professor of Agriculture, Emeritus.
John Henry Comstock, B.S., Professor of Entomology and General Invertebrate Zoology, Emeritus.
John Lemuel Stone, B.Agr., Professor of Farm Practice, Emeritus.
Liberty Hyde Bailey, M.S., LL.D., Litt.D., Ex-Dean, Professor, Emeritus.
Whitman Howard Jordan, LL.D., Professor of Animal Nutrition, Emeritus.
Mrs. Anna Botsford Comstock, B.S., Professor of Nature Study, Emeritus.
Wilford Murry Wilson, M.D., Professor of Meteorology, Emeritus.
Henry Hiram Wing, M.S. in Agr., Professor of Animal Husbandry.
Thomas Lyttleton Lyon, Ph.D., Professor of Soil Technology.
James Edward Rice, B.S.A., Professor of Poultry Husbandry.
George Walter Cavanaugh, B.S., Professor of Agricultural Chemistry.
George Nieman Lauman, B.S.A., Professor of Rural Economy.
Herbert Hice Whetzel, M.A., Professor of Plant Pathology.
George Frederick Warren, Ph.D., Professor of Agricultural Economics and Farm Management.
Ralph Sheldon Hosmer, B.S.A., M.F., Professor of Forestry.
James George Needham, Ph.D., Litt.D., Professor of Entomology and Limnology.
Rollins Adams Emerson, D.Sc., Professor of Plant Breeding.
Harry Houser Love, Ph.D., Professor of Plant Breeding.
Donald Reddick, Ph.D., Professor of Plant Pathology.
Flora Rose, B.S., M.A., Professor of Home Economics.
Martha Van Rensselaer, A.B., Professor of Home Economics.
James Adrian Bizzell, Ph.D., Professor of Soil Technology.
Glenn Washington Herrick, B.S.A., Professor of Economic Entomology.
Howard Wait Riley, M.E., Professor of Rural Engineering.
Harold Ellis Ross, M.S.A., Professor of Dairy Industry.
Hugh Charles Troy, B.S.A., Professor of Dairy Industry.
Samuel Newton Spring, B.A., M.F., Professor of Silviculture.
Karl McKay Wiegand, Ph.D., Professor of Botany.
Arthur Bernard Recknagel, B.A., M.F., Professor of Forest Management and Utilization.
Merritt Wesley Harper, M.S., Professor of Animal Husbandry.
Cyrus Richard Crosby, A.B., Extension Professor of Entomology.
Elmer Seth Savage, Ph.D., Professor of Animal Husbandry.
Edward Albert White, B.Sc., Professor of Floriculture and Ornamental Horticulture.
Alvin Casey Beal, Ph.D., Professor of Floriculture.
Herbert Andrew Hopper, B.S.A., M.S., Extension Professor of Animal Husbandry.
Edward Sewall Guthrie, Ph.D., Professor of Dairy Industry.
William Charles Baker, B.S.A., Professor of Drawing.
Mortier Franklin Barrus, Ph.D., Extension Professor of Plant Pathology.
Oskar Augustus Johannsen, Ph.D., Professor of Entomology.
Clyde Hadley Myers, Ph.D., Professor of Plant Breeding.
Bristow Adams, B.A., Professor in Extension Service, Editor, and Chief of Publications.

Asa Carlton King, B.S.A., Professor of Farm Practice and Farm Superintendence.
George Abram Everett, A.B., LL.B., Professor of Extension Teaching.
Lewis Knudson, Ph.D., Professor of Botany.
E. Gorton Davis, B.S., Professor of Landscape Architecture.
Ralph Wright Curtis, M.S.A., Professor of Ornamental Horticulture.
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Paul J. Kruse, Ph.D., Professor of Rural Education.
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James Ernest Boyle, Ph.D., Professor of Rural Economy.
Ezra Dwight Sanderson, Ph.D., Professor of Rural Social Organization.
Homer Columbus Thompson, Ph.D., Professor of Vegetable Gardening.
William Joseph Wright, M.S., Extension Professor of Rural Education and State Leader of Junior Extension.
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James Chester Bradley, Ph.D., Professor of Entomology and Curator of Invertebrate Zoology.
George Charles Embody, Ph.D., Professor of Aquiculture.
Arthur Johnson Eames, Ph.D., Professor of Botany.
John Hall Barron, B.S.A., Extension Professor of Field Crops.
Gad Parker Scoville, B.S. in Agr., M.A., Professor of Farm Management.
Leonard Amby Maynard, Ph.D., Professor of Animal Husbandry.
Montgomery Robinson, Litt.B., B.S., Professor in Extension Service.
Arthur John Heinicke, Ph.D., Professor of Pomology.
Edward Gardner Misner, Ph.D., Professor of Farm Management.
William Irving Myers, Ph.D., Professor of Farm Finance.
Theodore Hildreth Eaton, Ph.D., Professor of Rural Education.
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Otis Freeman Curtis, Ph.D., Professor of Botany.
Louis Melville Massey, Ph.D., Professor of Plant Pathology.
Axel Ferdinand Gustafson, Ph.D., Extension Professor of Soil Technology.
E. Laurence Palmer, Ph.D., Professor of Rural Education.
Philip Henry Wessels, M.S., Research Professor of Vegetable Gardening.
Frank Ashmore Pearson, Ph.D., Professor of Marketing.
Robert Matheson, Ph.D., Professor of Economic Entomology.
John Clarence McCurdy, B.S., C.E., Professor of Rural Engineering.
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Frank Pores Bussell, Ph.D., Professor of Plant Breeding.
Richard Alan Mordoff, Ph.D., Professor of Meteorology.

*Absent on leave.

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Paul Francis Sharp, Ph.D., Professor of Dairy Chemistry.
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Alpheus Mansfield Goodman, B.S.A., Extension Professor of Rural Engineering.
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Loren Clifford Petry, Ph.D., Professor of Botany.
Clyde B. Moore, Ph.D., Professor of Rural Education.
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Emma Conley, A.B., Acting Professor of Rural Education.
Peter Walter Claassen, Ph.D., Professor of Biology.
Leland Spencer, Ph.D., Professor of Marketing.
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Otto Rahn, Ph.D., Professor of Bacteriology.
Charles Chupp, Ph.D., Extension Professor of Plant Pathology.
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George Frederick Sprague, M.S., Assistant in Plant Breeding Investigations.
Martin Paul Catherwood, M.S., Assistant in Farm Management.

GENERAL INFORMATION

FOUNDATION AND MAINTENANCE

Cornell University is composed of eight colleges and the Graduate School. One of these colleges is the College of Agriculture.

Cornell University was chartered by the Legislature in 1865, being founded on the Land-Grant Act of 1862. By the terms of the Land-Grant Act, teaching in agriculture has been from the first a regular part of the university enterprise. As in other States, the State Government has made large supplementary appropriations for the work in agriculture. In 1904 the Legislature of the State of New York made an appropriation of $250,000 for the erection of buildings for the College of Agriculture in Cornell University, with an additional appropriation for maintenance and operation, and established the College as a state institution under the title, "The New York State College of Agriculture at Cornell University." Before this time the State had established at Cornell University "The New York State Veterinary College." In 1925 "The New York State College of Home Economics at Cornell University," formerly a department of the College of Agriculture, was established as a third state college at Ithaca. In 1906 the Legislature passed an Administration Act, defining the purpose and the activities of the College of Agriculture thus: "The object of the said college of agriculture shall be to improve the agricultural methods of the state; to develop the agricultural resources of the state in the production of crops of all kinds, in the rearing and breeding of livestock, in the manufacture of dairy and other products, in determining better methods of handling and marketing such products, and in other ways; and to increase intelligence and elevate the standards of living in the rural districts. For the attainment of these objects the college is authorized to give instruction in the sciences, arts, and practices relating thereto, in such courses and in such manner as shall best serve the interests of the state; to conduct extension work in disseminating agricultural knowledge throughout the state by means of experiments and demonstrations on farms and gardens, investigations of the economics and social status of agriculture, lectures, publication of bulletins and reports, and in such other ways as may be deemed advisable in the furtherance of the aforesaid objects; to make researches in the physical, chemical, biological, and other problems of agriculture, the application of such investigations to the agriculture of New York, and the publication of the results thereof." Since 1906 the State has provided many additional buildings and has made increasingly large appropriations for maintenance and operation. The College has been designated by the State as the recipient of the funds appropriated to the State by the Federal Government under the Morrill and Smith-Lever Acts. It shares with the New York Agricultural Experiment Station at Geneva the funds derived from the Hatch,

Adams, and Purnell Acts, and with other institutions those devoted to teacher training under the Smith-Hughes Act.

THE BUILDINGS

The buildings erected under the enactment of 1904 were first occupied in June, 1907. The central group then erected consisted of a main administrative and classroom building, connected by covered loggias with the Dairy Building, now East Roberts, on the east and with Stone Hall, now used by the Department of Botany and the College Library, on the west. Subsequently, the Legislature provided for the erection of two large barns, a greenhouse, a forestry building, a poultry husbandry building, a soils building, an auditorium, a classroom building and a stock-judging building for animal husbandry, an extension of the greenhouse range, several small poultry buildings, a sheep barn, a swine barn, a farm shop and tool shed, an addition to the cafeteria in the home economics building, an insectary, and a heating plant. There are, in addition, the frame buildings occupied by the Departments of Rural Engineering and Floriculture and Ornamental Horticulture, a fish-breeding house in Cascadilla Creek, a seed-storage house, a cold-storage and packing house, and other small buildings on the farms. In 1920, the State authorized the College to plan a further development of its building program involving an expenditure of $3,000,000. Under this building plan $500,000 was appropriated in 1920 for a new dairy building, and in 1922 provision was made for its equipment. The building came into use in the fall of 1923. A further appropriation of $500,000 was made in 1923, and this has been used in part in certain operations preparatory to the erection of new buildings to the east of the original group. A new greenhouse range has been erected, the top floor of the Dairy Building has been finished, the Rural Engineering laboratories have been moved and remodeled. By action of the Legislature of 1927 the remainder of this appropriation may be used for beginning the erection of a Plant Industry Building.

THE FARMS

The College of Agriculture has 998 acres of land and rents 150 additional acres, making a total of 1148 acres under college management. These farms are run not for commercial but for educational purposes, and the practices are therefore modified to meet the varied demands of the institution.

Land in the vicinity of the College is very broken, abounding in hills and dales, brooks and gorges. In consequence, little more than one-half of the total area is now available for tillage. Of the 1148 acres 639 are classified as arable, 282 as pasture, 185 as wood and waste, and 42 are devoted to buildings, lots, and gardens.

Part of the tillable area has been assigned to departments, as follows: Agronomy, 32 acres; Animal Husbandry, 25 acres; Floriculture and

Ornamental Horticulture, 25 acres; Plant Breeding, 66 acres; Pomology, 73 acres; Poultry Husbandry, 72 acres; Vegetable Gardening, 9 acres; and there are left to the Office of Farm Practice and Farm Superintendence 337 acres on which to conduct the regular farm operations. Of the other areas, the Department of Animal Husbandry has the use of all the pasture land; the Department of Forestry administers (now for over a decade) 80 acres of woodland under systematic forest management; and the Department of Entomology uses about 5 acres of waste land for a fish hatchery.

The soil of the college farms is heavy, nearly all of it being Dunkirk clay loam. A few fields at the extreme southeastern corner are Volusia stony loam. The Dunkirk clay loam is entirely unsuited to potatoes and is not well adapted to corn, but will grow fair crops of corn if heavily manured. It is well adapted to wheat, oats, timothy, and clover. The Volusia stony loam, when well drained and freed from stones, is well adapted to corn and potatoes. The recently acquired areas lack both these improvements.

THE COLLEGE LIBRARIES

The library facilities of the College of Agriculture include: a large collection of books and periodicals on agriculture, animal husbandry, botany, horticulture, forestry, entomology, and other kindred subjects, contained in the University Library and numbering about thirty thousand volumes; the Agricultural College Library in Stone Hall, with a working and reference collection of more than fifty thousand bound volumes and a large number of bulletins, reports, and other pamphlets in unbound form; and various small departmental collections for laboratory and office use. In addition to these, the Agricultural College possesses the Craig horticultural library, gift of the widow of the late Professor John Craig, consisting of about three hundred volumes, and the A. I. Root Memorial Library, recently begun, but already containing more than thirteen hundred volumes in the field of apiculture. The Department of Animal Husbandry has a large and rapidly increasing collection of herd books, registers, and the like, for the use of its instructing staff and its students. Altogether, about ninety thousand volumes are available for the instructing staff and the students of the College of Agriculture. Wherever housed, the books are regularly catalogued at the University Library.

All these libraries are likewise provided with the principal periodicals relating to agriculture and kindred subjects. In the University Library are to be found the files and current numbers of the leading foreign periodicals, especially those of a purely scientific character and those used chiefly for research. The Agricultural Library carries on its shelves more than five hundred periodicals of various kinds for the use of students; these include the principal agricultural, horticultural, and stock-raising journals of the United States and Canada,

together with many from foreign countries. The Entomological Library is supplied with the leading periodicals relating to general and economic entomology. In addition to these, many of the departments receive periodicals for the use of instructors and students, and the Departments of Agricultural Economics and Farm Management, Animal Husbandry, Dairy Industry, Plant Pathology, and Poultry Husbandry maintain small reading rooms of their own.

All the books of the Agricultural College Library are in reserve for reference purposes only; students are allowed to draw them for home use only when the library is closed overnight and over Sunday. In order to afford the greatest possible opportunity for using the books, the Agricultural College Library is open from eight in the morning until ten o'clock at night every day of the week during the college year except Saturday, when it is closed at six o'clock in the afternoon.

PAYMENTS TO THE UNIVERSITY

Tuition

Tuition is free to undergraduate students pursuing full, special, or short courses in the New York State College of Agriculture, the New York State Veterinary College, or the New York State College of Home Economics (except the course in Hotel Administration) who at the beginning of the college year are, and for at least twelve months prior thereto have been, bona-fide residents of the State of New York; provided, however, that no student shall be allowed to transfer from any such course to another course wherein tuition is charged without first paying the regular tuition fees for the hours for which he may receive credit in the latter course.

Students in Agriculture who are not exempt under these provisions are required to pay tuition as follows: For the regular year, $200, except in the Graduate School, where the tuition is $75; in the Summer Session, $50; in the Summer School in Agriculture, $50; in the Winter Courses in Agriculture, $25.

The tuition fee of $200 is payable in installments of $110 at the beginning of the first term and $90 at the beginning of the second term, but a student registered only for the second term of the academic year is required to pay at the rate of the first term.

Tuition and other fees become due when the student registers. The University allows twenty days of grace after the last registration day of each term of the regular session. The last day of grace is generally printed on the registration coupon which the student is required to present at the Treasurer's office. Any student who fails to pay his tuition charges, other fees, and other indebtedness to the University, or who, if entitled to free tuition, fails to claim it at the Treasurer's office and to pay his fees and other indebtedness, within the prescribed period of grace, is thereby dropped from the University unless the Treasurer has granted him an extension of time to complete payment. The Treasurer is permitted to grant such an extension

when, in his judgment, the circumstances of a particular case warrant his doing so. For any such extension the student is assessed a fee of $5 for the first week and $2 additional for each subsequent week in which the whole or any part of the debt remains unpaid but the assessment in any case is not more than $15. The assessment may be waived in any instance for reasons satisfactory to the Comptroller and the Registrar, when such reasons are set forth in a written statement.

The rules governing the rate of tuition in cases of withdrawal during the term or of registration late in the term are stated in the General Circular of Information.

Any tuition or other fee may be changed by the Board of Trustees to take effect at any time without previous notice.

Other Fees

A matriculation fee of $10 is required of every student upon entrance into the University. This fee must be paid at the time of registration. A new undergraduate student who has made the required deposit of $25 with the Treasurer does not make an additional payment of the matriculation fee, because the Treasurer draws on the deposit for this fee. See page 20.

An infirmary fee of $5 a term is required, at the beginning of each term, of every student. For a statement of the privileges given in return for this fee, see the General Circular of Information.

A Willard Straight Hall Membership Fee of $4 a term is required, at the beginning of each term, of every undergraduate student. Its payment entitles the student to a share in the common privileges afforded by the operation of Willard Straight Hall, subject to regulations approved by the Board of Managers of the Hall. The fee of $4 a term is required of all graduate students except those who are members of the instructing staff, for whom membership is optional. The use of the hall is restricted to those who have paid this fee.

A physical recreation fee is required, at the beginning of each term, of every undergraduate man and of every woman of the freshman and sophomore classes. It is $2 a term for men and $1 a term for women. Its payment entitles a man student to the use of the gymnasium and the university playgrounds and to the use of a locker, with bathing facilities and towels, in the gymnasium, the New York State Drill Hall, or the Schoellkopf Memorial Building; and a woman student to the use of the women's gymnasium, recreation rooms and playgrounds, and to the use of a locker.

A graduation fee is required, at least ten days before the degree is to be conferred, of every candidate for a degree. For a first, or baccalaureate degree, the fee is $10; for an advanced degree it is $20. The fee will be returned if the degree is not conferred.

Laboratory fees. In courses of study that require work in laboratory, shop, or drafting room, or field work, a fee is charged to cover the cost of material used by the student.

Deposits. In some courses, particularly in Chemistry, the student is required to make in advance, at the office of the Treasurer of the University, a deposit of money to cover the cost of material to be used and supplies to be consumed by him in the course of the term; accounts are kept and charges are entered against the deposit; at the end of the term any balance remaining of the deposit is returned to the student.

Payment of the fee or of the deposit. Every person taking work in a laboratory or in a course wherein a laboratory fee is charged or wherein a deposit is required must pay to the Treasurer of the University the laboratory fee or the deposit as directed by the laboratory card which he will receive.

An allowance of $30 a year will probably cover laboratory fees for most students. Books, stationery, and apparatus may use as much more. The average cost of board and lodging in Ithaca is rather above than below $12 a week; $10 is perhaps the lowest practicable allowance.

Rules Governing Minor Delinquencies

Every student is held personally responsible for any injury done by him to any of the University's property.

Assessments, charged to the student's account and payable at the Treasurer's office, are levied upon the student in certain circumstances, under the following rules of the University:

A student desiring to be reinstated after being dropped from the University for delinquency in scholarship or in conduct shall first pay a fee of $25.

A matriculated student desiring to register after the close of registration day shall first pay a fee of $5.

A student desiring to file his registration of studies after the date set by this college for filing the same shall first pay a fee of $2.

A student desiring to take an examination or other test for the removal of a term condition (including the making up of a mark of "absent" or "incomplete") shall first pay a fee of $2 for each examination or other test.

A student desiring to make an appointment for the required medical examination or conference after twenty days from the last registration day of the term shall first pay a fee of $2.

For reasons satisfactory to the proper authority, any of the above-mentioned assessments (except that levied for examination or other test to remove a condition) may be waived in any individual case if the student's failure to comply with the regulation was due to ill health or to any other reason beyond his control.

BOARD AND LODGING

Halls and lodging for men. The University has six residential halls for men, offering accommodations for about 480 students. For particulars, address the Manager of Residential Halls, Morrill Hall, Ithaca, New York.

Many private lodging houses near the University offer furnished rooms, with heat and light, at rates ranging from $3 to $6 a week for a single room. Before he rents a room in a private house, a student should make sure, by a personal inspection, that the sanitary arrangements of the house are good, and he should especially insist on a good fire escape. The University publishes a list of lodging houses which have been inspected and found to be satisfactory in the above respects; the list is ready for distribution on August 15. New students, if they have not already engaged rooms, are advised to come to Ithaca and do so a few days before the day set for registration. The Freshman Advisory Committee offers its help to new students, and sends them a circular letter of suggestions about September 1.

The number of private houses that offer both rooms and board is small, and many students get their meals outside the houses where they live. The University conducts a cafeteria in Cascadilla Hall and another in Willard Straight Hall, and the College of Home Economics also has a public cafeteria. There are other good cafeterias which are patronized mainly by students. In the comparatively few boarding houses, the rates for table board range upward from $8.50 a week.

Halls for women. The University provides furnished rooms and board for student women in Sage College and Prudence Risley Hall, which are the main residential halls for women, and also in several neighboring cottages. To a student living in one of these buildings, the University's annual charge for board, laundry, and rent of furnished room, with heat and light, is $515. The Dean of Women has supervision of all the student women of the University; no one of them may lodge or board outside the halls for women except with her approval and then only in a house that she has approved and that is subject to her direction. Young women who are to attend the University should write to the Dean of Women about any arrangements in which they are likely to need guidance or help. Dormitory facilities for women are inadequate, and prospective students desiring such accommodations are urged to make early application. Inquiries about board and rooms in the women's halls should be addressed to the Manager of Residential Halls, Morrill Hall, Ithaca, New York.

SCHOLARSHIPS

The State University Scholarships

Under Chapter 292 of the Laws of 1913, as amended by Chapter 502, Laws of 1920, and Chapter 130, Laws of 1924, the State of New York maintains scholarships, five of which are awarded each county annually for each assembly district therein. Each of these scholarships entitles the holder to $100 for each year while he is in attendance upon an approved college in this State during a period of four years. These are called the State University Scholarships. At Cornell they are commonly known as the State Cash Scholarships, to distin-

guish them from the State Tuition Scholarships in this University. They are awarded by the State Commissioner of Education at Albany, to whom applications should be made for any information about the conditions of award, or for any information about the rules of administration.

The University Undergraduate Scholarships

Eighteen University Undergraduate Scholarships, each continuing for two years and having an annual value of $200, are offered each year to members of the incoming freshman class. The award is made on the basis of a special competitive examination held in Ithaca in September, between the period of the entrance examinations and the opening of the University. Every candidate for a University Undergraduate Scholarship must have satisfied in full the entrance requirements of that college of the University which he proposes to enter. See the General Circular of Information for the rules under which these scholarships are awarded.

The Roberts Scholarships

The Roberts Scholarship Fund, a gift of the late Dr. Charles H. Roberts of Oakes, Ulster County, New York, provides five scholarships, each retainable for one year. As expressed by the founder, the purpose of these scholarships is to furnish financial assistance to students in the College of Agriculture who are of good moral character, who show native ability, tact, and application, and who are in need of such assistance, especially students who come from rural districts. The award is made after the close of each year. Application blanks and copies of the regulations may be obtained at the office of the Secretary of the College of Agriculture. All applications must be on the official blanks, which, with all other information, must be filed with the Secretary of the College before June 1. The value of each scholarship is $320.

Scholarships for Nonresidents

There are available ordinarily ten scholarships carrying free tuition to nonresidents of New York who are especially worthy of aid.

Dreyfus Memorial Scholarships

Two scholarships of an annual value of $600 each have been established by Mrs. Berta E. Dreyfus in memory of her husband, Dr. Louis A. Dreyfus. In their award preference is given first to students coming from the high schools of Richmond County, New York, and next to those from Sandusky County, Ohio. First consideration is given to those specializing in Chemistry, Engineering, or Agriculture, or in the case of women, in Home Economics or Arts and Sciences. Application must be made to the Dean of the University Faculty before the first Wednesday of May.

Other Scholarships

A description of other scholarships open under certain conditions to undergraduates in the College of Agriculture will be found in the General Circular of Information.

PRIZES

The Eastman Prizes for Public Speaking

With the object of developing qualities of personal leadership in rural affairs, Mr. A. R. Eastman, of Waterville, New York, established annual prizes, the first of $100 and the second of $20, for public speaking on country-life subjects in the College of Agriculture. These prizes are designated the Eastman Prizes for Public Speaking. Competitition is open to any regular or special student. The contest takes place in February.

The Farm Life Challenge Prize

To stimulate the study and public discussion of vital farm-life problems, an anonymous donor has established annual prizes, the first of $100 and the second of $50. The competition has two parts, written and oral, weighted three and one respectively. The written discussion, not exceeding 5000 words, must be submitted at the office of the College Secretary by noon of November 1. The final oral competition is held in Farmers' Week. The topic set for the competition of 1927–28 is Farm Relief Legislation.

The Ring Memorial Prizes

By bequest of Mr. Charles A. Ring, of Niagara County, New York, a first prize of approximately $30 and a second prize of approximately $20 have been established, to be awarded to undergraduate students in agriculture who, in essays giving reviews of the literature on problems in floriculture, vegetable gardening, or pomology, show the greatest ability to evaluate scientific evidence. The essays must be submitted to the Secretary of the Faculty of Agriculture by noon on May 1.

The Stewart Prize for the Production of Clean Milk

With the object of increasing the interest in the production of clean milk, Mr. S. L. Stewart, of Brookside Farm, Newburgh, New York, has offered for the coming year a prize of $50 to be divided among students participating in a clean-milk contest. This money is to be apportioned by the Department of Dairy Industry, and the regulations governing the contest are to be fixed by the department. Definite announcement concerning the contest will be made to students taking course 102, in dairy industry, soon after the course opens in February.

The Charles Lathrop Pack Prize

The Charles Lathrop Pack Prize, the income on a gift of $1000, is awarded annually by the staff of the Forestry Department to that member of the senior class of professional forestry students who has maintained the best all-around record during his college course. In selecting the recipient, the staff is guided not only by scholastic standing, but as well by the general attitude displayed in classroom and laboratory and in the field and in matters that have to do in general with furthering the welfare of the Department of Forestry.

The Charles Lathrop Pack Foundation Forestry Prize

The Charles Lathrop Pack Foundation Forestry Prize consists of the income on a fund of $1000, and is awarded annually in April for the best essay on forestry submitted by a professional forestry student. The purpose of the prize, as expressed by the donor, is "to aid in training foresters to write articles which will arouse in the public an interest in forestry and an appreciation of what forestry means to the country." The award is made by a committee appointed by the President of the University. The detailed regulations will be furnished by the Forestry Department or at the Secretary's Office. The essay must be deposited at the office of the head of the Department of Forestry by noon of April 15.

Alumni Prize

The Alumni Association of the College of Agriculture contributes an annual prize of $25 to be awarded at the close of the junior year to the student who has maintained the best scholastic record during his three years in the University, the award to be made by the Faculty of the College.

For information concerning other prizes offered in the University and open to competition of students in the College of Agriculture, see the special pamphlet on prizes, which may be obtained upon application to the Secretary of the University.

INFORMATION CONCERNING COURSES

The regular instruction in the College of Agriculture constitutes a course of four years, or eight terms, leading to the degree of bachelor of science. The requirements for graduation that are stated below apply to all students in this course and they are of such a nature as to give opportunity for following specialized interests under the guidance of faculty advisers.

From 70 to 80 per cent of the men graduates of the College go into agricultural pursuits. Besides farming, which is the most common occupation followed, there is a great range of related professional or technical vocations, for which the agricultural course offers training. Manufacturing dairy products, teaching agriculture, agricultural extension, work in agricultural experiment stations, and administrative work in farmers' organizations dealing in agricultural products and machinery may be cited as examples of these vocations. No special curricula are laid out for these specializations, but the student, with the help of a faculty adviser, can map out such a course within the general requirements for graduation.

In Forestry there are provided such courses as are needed by farmers for the proper management of farm woodlots, and a professional course is outlined on pages 48–49.

Aside from the four-years course, there is a twelve-weeks winter course not giving credit toward a degree; a six-weeks summer school designed especially for teachers, school principals, and superintendents; and a special school of biology held in connection with the summer school. Circulars describing these various courses may be obtained on application to the Secretary.

Inquiries regarding graduate work in Agriculture should be addressed to the Dean of the Graduate School.

THE REGULAR FOUR-YEARS COURSE

Men who are candidates for admission to the regular, or four-years, course must be at least sixteen years of age; women must be at least seventeen years of age. They must have certificates of good moral character; and students from other colleges or universities are required to furnish from those institutions certificates of honorable dismissal. Students are admitted on examination, or on presenting acceptable credentials of the University of the State of New York, or on acceptable school certificates.

By action of the Board of Trustees of Cornell University, all students matriculating in the University must present a satisfactory certificate of vaccination against smallpox, not later than August 1, if he is to be admitted in September or not later than January 1 if he is to be admitted in February. This certificate is considered satisfactory only if it certifies to a successful vaccination within five years

or certifies that at least three unsuccessful attempts have been made within the same period.

Prospective students who have neither lived on farms nor had considerable practical experience in agriculture are urged to spend at least one year on a well-managed farm in order to familiarize themselves with common farm affairs and operations before entering the College. This experience is necessary in order to meet the farm-practice requirement (pages 22 and 44).

The Application for Admission

Every candidate for admission to an undergraduate course must deposit twenty-five dollars with the Treasurer, not later than August 1 if he is to be admitted in September, or not later than January 1 if he is to be admitted in February. A check, draft, or order should be payable to Cornell University and should be sent to The Treasurer, Cornell University.

If the candidate matriculates, the deposit will be credited to his account, $10 for the matriculation fee and $15 as a guaranty fund, which every undergraduate student is required to maintain and which is to be refunded upon his graduation or permanent withdrawal, less any indebtedness to the University.

If the application is withdrawn before the due date (August 1 or January 1, as the case may be) the deposit will be refunded in full; if it is withdrawn within the month of the due date (August or January) $10 will be charged to cover accrued expenses and $15 will be refunded; after that month no refund will be made. If admission is denied a candidate who has complied with all these rules his deposit will be refunded in full at any time.

Candidates for admission must file their credentials and obtain permits for any necessary entrance examinations at the University Registrar's office, Morrill 18. The results of examination may be ascertained from the Registrar.

Entrance Requirements for the Four-Years Course

The subjects that may be offered for admission to Agriculture are named in the following list; the figure in parenthesis following each subject indicates its value in entrance units and shows the maximum and the minimum amount of credit allowed in the subject. A unit represents five recitations a week for one year in a study.

1a.	English No. 1	(1½)	5b.	Second Year French	(1)
1b.	English No. 2	(1½)	5c.	Third Year French	(1)
1c.	English (elective)	(1)	5d.	Fourth Year French	(1)
2a.	First Year Greek	(1)	6a.	First Year Spanish	(1)
2b.	Second Year Greek	(1)	6b.	Second Year Spanish	(1)
2c.	Third Year Greek	(1)	6c.	Third Year Spanish	(1)
3a.	First Year Latin	(1)	6d.	Fourth Year Spanish	(1)
3b.	Second Year Latin	(1)	7a.	First Year Italian	(1)
3c.	Third Year Latin	(1)	7b.	Second Year Italian	(1)
3d.	Fourth Year Latin	(1)	7c.	Third Year Italian	(1)
4a.	First Year German	(1)	8a.	Ancient History	(½–1)
4b.	Second Year German	(1)	8b.	Modern History	(½–1)
4c.	Third Year German	(1)	8c.	American History, Civics	(½–1)
4d.	Fourth Year German	(1)	8d.	English History	(½–1)
5a.	First Year French	(1)	9a.	Elementary Algebra	(1)

9b.	Intermediate Algebra....	(½)	
9c.	Advanced Algebra.....	(½)	
9d.	Plane Geometry.....	(1)	
9e.	Solid Geometry.....	(½)	
9f.	Plane Trigonometry.....	(½)	
10.	Physics.....	(1)	
11.	Chemistry.....	(1)	
12.	Physical Geography.....	(½–1)	
13.	Biology*.....	(1)	
14.	Botany*.....	(½–1)	
14a	Zoology*.....	(½–1)	
15.	Bookkeeping†.....	(½–1)	
16.	Agriculture including Home Economics†.....	(½–4)	
17.	Drawing.....	(½–1)	
18.	Manual Training.....	(½–1)	
19.	Any high-school subject or subjects not already used.	(½–1)	

For admission to the New York State College of Agriculture, an applicant must offer either A or B, as follows:

A. Fifteen units, arranged as follows: English (3), history (1), elementary algebra (1), plane geometry (1), foreign language (3 units in one language or 2 units in each of two), elective (6 or 5). Solid geometry and plane trigonometry are recommended among the elective units for students entering the course in forestry.

B. The New York State Academic Diploma in Agriculture, with the proviso that elementary algebra, 1 unit, and plane geometry, 1 unit, are included. If a student entering on one of these diplomas does not present three units of foreign language or two units in each of two languages, he must elect an equivalent amount of work in the University in one or more of the following subjects: foreign language, English, mathematics, philosophy, psychology, history, economics, political and social sciences.

Requirements for Admission of Special Students

Opportunities are provided for persons who desire to pursue special studies. In order to be eligible for admission to special work, applicants must offer two full years of recent farm experience and must also either have fifteen units of entrance credits or be twenty-one years of age. In addition, an applicant for admission on the age requirement must satisfy the faculty of his ability to perform the work; and every applicant must satisfy the faculty of his bona-fide desire for special study. He will be required to present an honorable dismissal from the school last attended, certificates of good moral character, and other such certificates and letters as may be desired. The special work is designed to meet the needs of young men and young women from farms, who have not time for a four-years course, and of mature persons who desire to spend a brief period in specialized study. The work is not a definite "course," in the sense of having a program or a prescribed set of studies. The student chooses any of the agricultural "electives" that he is fitted to pursue. Admission as a special student does not admit to classes. The student is admitted to the various classes by the heads of the departments concerned, but only after admission to the College.

Special students must leave a record of their farm experience with the Department of Farm Practice during registration week.

*If an applicant has counted Biology (1), he may not also offer Botany (½) or Zoology (½).

†An applicant may offer not to exceed four units in vocational subjects under numbers 16, 18, and 19, combined. Bookkeeping may not be offered together with more than one of the subjects listed under 16, 17, 18.

Other Details of Admission

Other details as to subjects and methods of admission can be found in the General Circular of Information, which may be obtained on application to the Secretary of the University.

For admission to the freshman class and to advanced standing from other colleges and universities, all communications should be addressed to the Registrar of the University. Details can be found in the General Circular of Information.

For admission as a special student, communications should be addressed to the Secretary of the College of Agriculture.

For admission to graduate work and candidacy for advanced degrees, communications should be addressed to the Dean of the Graduate school.

Requirements for the Degree of Bachelor of Science

The requirements for the degree of bachelor of science are residence for eight terms, and, in addition to the prescribed work in the Departments of Physical Training and Military Science and Tactics, and in Hygiene and Preventive Medicine, the completion of one hundred and twenty hours of required and elective work, as outlined on pages 24–26.

All men students must satisfy the farm-practice requirement before the beginning of the senior year. This requirement is the equivalent of a year or more of actual farm work. In order to meet it, students should have a good working knowledge of horses, cattle, sheep, swine, poultry, crops, and machinery, and of the ordinary farm operations as they are practiced on a general farm. Exemption from this requirement is allowed only to students specializing in the Department of Botany, Forestry, or Entomology. Application for such exemption must be made at the office of the Secretary of the College. Students should complete the requirement as early in their course as possible, since it is a prerequisite for admission to certain courses.

Freshmen are required to attend, during their first term, a course of lectures designed to orient students in the life of the University and specifically to acquaint them with the scope and purpose of the courses of instruction in the College. The course requires attendance two hours a week and carries one hour of credit.

Credit toward a degree for work done in a preparatory school on subjects that may be offered for entrance to the University will be given to those students only who, in addition to satisfying all entrance requirements, pass separate examinations in the subjects for which they seek college credit. These examinations will cover substantially the same ground as the university courses in the subjects. An applicant desiring a college-credit examination of this kind must apply to the Registrar as early as possible, and at least twenty-four hours before the first examination, specifying which fifteen units he intends to offer in satisfaction of the entrance requirements, and on

what other entrance subjects he wishes to be examined for credit. In case he fails to satisfy the entrance requirements in any one or more of the units on which he proposes to enter, but passes the credit examination in any other subject or subjects, he may use the latter toward satisfying entrance requirements, but in that case he cannot also receive college credit for it. The college-credit examinations will be held September 19 to 24, 1927, on the dates set for the entrance examinations in the same subjects.

A student who receives at entrance twelve or more hours of credit in addition to the requirements for admission may be regarded as having satisfied one term of residence. Under no circumstances shall surplus entrance credit be accepted as the equivalent of more than one term.

A student who has satisfied the entrance requirements of this College and has afterwards completed in two or more summer sessions in Cornell University at least twelve hours of work in courses approved by the departments concerned, may be regarded as having thus satisfied one term of residence. Under no circumstances shall work done in summer sessions be accepted as the equivalent of more than two terms of residence. The maximum amount of credit toward the degree of bachelor of science which is allowed for the work of any one summer session is eight hours.

A student admitted to the College of Agriculture from another college in Cornell University, or from any other institution of collegiate rank, will be regarded as having completed the number of terms and hours to which his records entitle him, and will receive all the privileges of students who have completed the same number of terms and hours by residence in the College. In order, however, to obtain the degree of bachelor of science, he must have completed the prescribed subjects in the four-years course and the requisite number of elective hours in agricultural subjects. He must also have been in residence in the College of Agriculture for his last two terms and have completed not less than fifteen hours a term, of which two-thirds, at least, must be subjects taught by the staff of the College of Agriculture.

A student must register for at least twelve hours each term, and no new student may register for more than eighteen hours.

Regular students may take, at their discretion, during their four years, not to exceed twenty hours of elective subjects in courses offered in other colleges than Agriculture; but such elective subjects shall not interfere with required or back work. Special students must take at least two-thirds of the entire work of each year from the agricultural subjects described on the following pages.

The Course Leading to the Degree of Bachelor of Science

REQUIRED COURSES: 45 HOURS

(Those required courses which are given in other colleges than Agriculture are described on pages 71–74.

Freshman Orientation Course 1
English 6
Botany, Biology, or Zoology 6
Chemistry or Physics 6
Physiology, one of the following 3
  Physiology of Domestic Animals
  Human Physiology
  Plant Physiology
Economics 5
Botany, Zoology, Bacteriology, Chemistry, Physics, Geology, Physical Geography, Mathematics, Drawing, Biology, Psychology, Economics 1, 5, 81, Accounting, Sociology 18

SPECIFIC REQUIREMENTS

The schedule of the freshman year must include the orientation course and six hours in each of the five following subjects or groups of subjects: (1) English; (2) chemistry or physics; (3) biology, botany, or zoology; (4) other specifically required courses listed above or courses in the eighteen-hour science group; (5) elective courses in the College of Agriculture.

Students who do not present chemistry for entrance are required to take chemistry.

Students who do not present physics for entrance are required to take physics.

Students who do not present geology or physical geography for entrance are required to take one of these subjects.

Professional students in forestry who do not offer plane trigonometry for entrance are required to take this subject in their freshman year.

In the eighteen hours of optional science work listed above, applied science courses may not be counted. Thus photography and dairy bacteriology may not be included as physics and bacteriology for this requirement.

PREREQUISITES

Where an option of required courses is offered, consideration should be given to the prerequisites demanded by the elective courses to be taken subsequently.

Agronomy 1 is prerequisite for Floriculture and Ornamental Horticulture 3 and 121, Rural Engineering 122, and Vegetable Gardening 2.

Bacteriology 1 is prerequisite for Agronomy 107 and Dairy Industry 102.

Botany 1 is prerequisite for further work in botany; for professional courses in forestry; for courses in plant breeding, plant pathology, and pomology; and for some of the courses in agronomy, floriculture, and vegetable gardening.

Botany 13 is prerequisite for forestry 121 and 124.

Botany 22 is prerequisite for forestry 140 and 141.

Botany 31 is prerequisite for professional courses in forestry, and for courses in floriculture and ornamental horticulture, plant breeding, and pomology.

Chemistry 101 is prerequisite for courses in agronomy, bacteriology, dairy industry, floriculture and ornamental horticulture, and pomology.

Chemistry 210 and 225 are prerequisite for Agronomy 107, 201, and 202, and recommended for Dairy Industry 101.

Chemistry 880 is prerequisite for Bacteriology 3.

Drawing 1 is prerequisite for Rural Engineering 102.

Drawing 2 is prerequisite for Rural Engineering 161.

Economics 1 is prerequisite for Agricultural Economics 125, 141, 161, and 262, and Forestry 3.

Economics 50a is prerequisite for Rural Social Organization 111, 112, and 131.

English 68 is prerequisite for Extension Teaching 117.

Geology 100 is prerequisite for Agronomy 1.

Home Economics Extension 100 is prerequisite for Extension Teaching 104.

Physics 3 and 4 are prerequisite for Rural Engineering 161.

Plant Breeding 1 is prerequisite for Animal Husbandry 102.

Rural Social Organization 11 is prerequisite for Extension Teaching 119.

Veterinary Physiology 10 is prerequisite for Animal Husbandry 101.

ELECTIVE COURSES: 75 HOURS

The remainder of the work—seventy-five hours—is made up of electives to be taken under the following restrictions:

A student may take, at his discretion, during his four years, not to exceed twenty hours of elective subjects in courses offered in other colleges than Agriculture; but such elective subjects shall not interfere with required or back work. The remainder of his elective work must be chosen from the agricultural subjects described on the following pages.

In selecting his course, the student must obtain the approval of a faculty adviser, preferably in the department in which he expects to specialize, who shall be chosen by the student at the beginning of the sophomore year. All students who are preparing for teaching are advised to consult a professor of rural education as well as their faculty adviser before filing their term schedules.

The following courses are open to freshmen, subject to the requirements stated above, provided, also, that prerequisites are satis-

fied and that acceptable equivalents have not been credited toward entrance:

Agricultural Economics and Farm Management 101.
Animal Husbandry 1, 2, 5, 10, 11, 12, 13, 20.
Aquiculture 73.
Bacteriology 4.
Bibliography 1.
Biology 1.
Botany 1.
Chemistry 101, 105, 205, 210, 225, 875.
Dairy Industry 1, 102.
Drawing 1, 11.
English 1, 4.
Entomology 10, 15, 21, 31.
Floriculture and Ornamental Horticulture 1, 5, 11, 43.
Forestry 1, 4, 24, 53.
French 1, 3, 4a, 4b, 5a, 5b, 6.
Geology 100, 101, 200, 201, 311, 400.
German 1, 1a, 3, 3a, 4, 5, 8.
Greek 1a, 1b, 2a, 2b.
History 1, 61.
Italian 1, 4.
Latin 1a, 1, 2.
Mathematics 1, 2, 2f, 3, 4, 5, 7, 15.
Meteorology 1, 2.
Music 1, 6, 7, by examination.
Physics 3, 4, 6.
Physiology, 303, 306.
Poultry Husbandry 1, 2, 3, 21.
Rural Education 1, 6, 7.
Rural Engineering 1, 21, 24, 31, 41, 42, 43, 44, 47.
Spanish 1, 3, 4a, 4b, 5a, 5b, 6.
Vegetable Gardening 1.
Zoology 1, 8, 9.

GRADUATED CREDIT

The passing grades are designated A, B, C, D, and P. In courses taken in the College of Agriculture, students meriting grade C receive normal credit toward graduation; grade B, 10 per cent additional credit; grade A, 20 per cent additional credit; grade D, credit reduced 10 per cent; and grade P, credit reduced 20 per cent. No student may be graduated in less than eight terms unless his work in the College of Agriculture averages 10 per cent excess credit.

COMBINED COURSE IN AGRICULTURE AND VETERINARY MEDICINE

Inasmuch as the requirements for graduation of the College of Agriculture and of the College of Veterinary Medicine are to some degree the same, it is possible, by a judicious use of elective hours, to complete the requirements in both colleges in seven or in six and a half years.

DEPARTMENTS OF INSTRUCTION

WITH OUTLINES OF COURSES THAT MAY BE CHOSEN BY REGULAR OR SPECIAL STUDENTS AS AGRICULTURAL ELECTIVES

Special Notices

The first term begins with the opening of the college year, in September. The second term begins in February. (See calendar, page 2.)

Unless otherwise noted, all courses are given in the buildings of the College of Agriculture. Courses enclosed in brackets will not be given in 1927–28.

Courses numbered from 1 to 100 are open to undergraduates generally; courses numbered from 101 to 200 are intended primarily for upperclassmen and graduates; courses numbered from 200 to 300 are intended primarily for graduates.

The main divisions of subject matter under which the courses are arranged are, for the most part, separate administrative units. The exceptions are bacteriology, which is administratively joined with dairy industry; zoology, which goes with entomology and limnology; drawing, part of which goes with floriculture and ornamental horticulture and part with rural engineering; and the course in Wild Life Conservation and Game Farming, which is given cooperatively.

AGRICULTURAL CHEMISTRY

Courses in agricultural chemistry are listed in the announcement of the College of Arts and Sciences.

AGRICULTURAL ECONOMICS AND FARM MANAGEMENT

Farm Management

101. **Farm Records and Accounts.** First term. Credit three hours. Open to all students who have passed the farm-practice requirement. Should precede course 102. Lectures, T Th 8. Marketing Building. Laboratory, M T 2–4.30, Marketing Building, or W 2–4.30, Farm Management Building 102. In addition to the regular laboratory period, outside work will occasionally be assigned instead of lectures. Assistant Professor Harriott.

Farm inventories, cash accounts, income-tax reports, single-enterprise cost accounts, complete farm cost accounts, and other farm records. Special emphasis is given to the interpretation of results and their application in the organization and management of farms. One half-day field trip will be taken, about November 1, on which day the laboratory period will be from one o'clock to seven o'clock. Laboratory fee, $3.

102. **Farm Management.** Second term. Credit five hours. Open to juniors and seniors who have passed the farm-practice requirement and to graduate students. This course is designed for students who have had considerable farm experience. It should be taken near the end of the student's college course, and should be preceded or accompanied by course 101, economics, and as many as possible of the subjects dealing with the production of crops and animals. Lectures, M W F 10. Farm Management Building 102. One laboratory period a week, by assignment. Farm Management Building 102. On days when farms are visited, laboratory work may last longer than two and one-half hours. Professor Myers and Mr. ————.

Lectures, recitations, and laboratory practice. Farming as a business; types of farming; balance of business; size of business; rates of production; farm layout; building arrangement; labor management; machinery; marketing; ways of starting to farm; forms of tenure and leases; choosing and buying a farm; use of capital and credit; planning, organization, and management of specific farms. One or two out-of-town trips during April and May will necessitate leaving on noon trains and returning on evening trains. Laboratory fee, $3.

103. **Business Organization and Management of Successful New York Farms.** First term. Credit three hours. Open to seniors and to graduate students. Prerequisite, permission to register. F 2–5, S 8–1. East Roberts 232. Two or three two-day trips will be taken in October or early November, on the regular class days. On days when out-of-town trips are taken, the class will usually leave before 2 o'clock and will not return until evening. Expenses for trips are estimated to be about $25. Professor SCOVILLE.

202. **Advanced Farm Management.** Second term. Credit two hours. For graduate students. Lectures, T Th 11–1. Farm Management Building 102. Professor WARREN.

The subjects discussed in the fall of 1927 will be forces governing land prices, land appraisal, and agricultural depressions.

203. **Advanced Farm Management.** First term. Credit two hours. M W 11–1. Farm Management Building 102. Professor MISNER.

A study of regions of production; rates and trends of production; income and cost of production; storage; distribution; prices; and other farm-management aspects of each of our leading agricultural industries, including the apple, peach, citrus, cotton, grain, vegetable, horse, sheep, swine, beef cattle, dairy, and poultry industries. Much of the time is devoted to the preparation and study of forms used in the collection and summarization of such data, and to the methods of tabulating and preparing same for publication.

111. **Agricultural Statistics.** First term. Credit three hours. Open to juniors, seniors, and graduate students. Lecture, M 8. Laboratory, M 2–4.30. East Roberts 232. Professor PEARSON.

A study of the principles involved in the collection, tabulation, and interpretation of agricultural and marketing statistics. This course is designed primarily for students who expect to pursue commercial work. Laboratory fee, $3.

112. **Agricultural Statistics, Advanced Course.** Second term. Credit three hours. Prerequisite, course 111. Lecture, M 8. Laboratory, M 2–4.30. East Roberts 232. Professor PEARSON.

This course is a continuation of course 111 and is intended primarily for students who expect to do research work. Laboratory fee, $3.

115. **Agricultural Prices.** Second term. Credit three hours. Open to juniors, seniors, and graduate students. Lectures, T Th 8. Laboratory, W 2–4.30. East Roberts 232. Professor PEARSON.

A study of prices of farm products in relation to agricultural and industrial conditions. Laboratory fee, $3.

299. **Seminary.** First and second terms. Open only to graduate students. M 4.45–6. Farm Management Building 102. Departmental staff.

MARKETING

(See also courses 111, 112, 115, 299 under Farm Management.)

121. **Accounting.** First term. Credit three hours. Without credit to students who have taken Economics 21a. Lectures, T Th 9. Farm Management Building 102. Laboratory, T or Th 2–4.30. Farm Management Building 102. Professor HOLMES.

The fundamentals of the double-entry system; the theory of debit and credit; the common books of original and final entry; the analysis and recording of ordinary business transactions; the trial balance; closing the books; preparation of work sheet and financial statements. The principles are developed mainly in terms of the simple trading enterprise. Laboratory fee, $1.

122. **Accounting.** Second term. Credit three hours. Prerequisite, course 121. Without credit to students who have taken Economics 21b. Lectures, T Th 9. Laboratory, T or Th 2–4.30. Farm Management Building 102. Professor HOLMES.

Manufacturing accounts; accounting for different types of business organization, the partnership, the corporation, the cooperative association; the application of accounting principles to some of the principal types of agricultural business; problems of valuation and income determination; the use of accounts

by the management of the business, with special reference to the analysis and interpretation of financial statements. Laboratory fee, $1.

125. **Business Management.** Second term. Credit three hours. Prerequisite, Economics 1 and Accounting 121 or their equivalents. Lectures, M W F 9. Farm Management Building 102. Professor HOLMES.

A general survey of the principles of organization and management of the individual business enterprise, with particular reference to agricultural business. Specific problems and cases taken from various types of business are used to develop and illustrate the principles and to give a comprehensive idea of the activities of the business enterprise, including production, distribution, financing, accounting, purchasing, and personnel control. Special attention is given to methods of analysis of business problems.

131. **Cooperative Marketing.** First term. Credit three hours. Open to juniors, seniors, and graduate students. Lectures, M W 9. Farm Management Building 102. Laboratory, M 2–4.30. Farm Management Building 102. Professor MYERS.

Principles of cooperative organization. Corporation and cooperative law. Financing the cooperative association. Relations to membership. Business policies. Laboratory fee, $2.

232. **Collective Bargaining.** Second term. Credit two hours. Open only to graduate students. Lectures, T Th 8. Farm Management Building 102. Professor BOYLE.

Collective bargaining and its use by labor, capital, and agriculture. The policy of collective bargaining. A study in price determination.

141. **Marketing.** First term. Credit four hours. Prerequisite, Economics 1. Open to juniors, seniors, and graduate students. Lectures, M W F 8. Farm Management Building 102. Discussion groups one hour a week. Professor BOYLE.

A study of the present organization, functions, and operation of the market structure, with particular reference to agriculture. Cooperative marketing is included. Laboratory fee, $1.

142. **Marketing (Fruits and Vegetables).** Second term. Credit three hours. Open to juniors, seniors, and graduate students. Lectures, T Th 10. Farm Management Building 102. Laboratory, T or Th 2–4.30. Marketing Building. Assistant Professor RASMUSSEN and Mr. ————.

A study of the economic factors involved in the marketing of potatoes, apples, cabbage, and other fruits and vegetables. Competition; distribution; methods of handling; costs of marketing, and so forth. One all-day trip will be taken in April, on a regular class day, to shipping points. The expense is estimated not to exceed $8. Laboratory fee, $2.

143. **Marketing (Dairy Products).** First term. Credit three hours. Open to juniors, seniors, and graduate students. Lectures, M W 11. Marketing Building. Laboratory, W 2–4.30. Marketing Building. Professor H. A. Ross.

A study of the economic factors involved in the marketing of dairy products, with special attention to fluid milk. Exchanges; storage; foreign trade; regional competition; analysis of supply and demand; surplus; economic basis of prices; methods of price determination; types of marketing organizations; sales methods; efficiency factors. Laboratory fee, $2.

144. **Marketing (By Nonresident Lecturers).** First term. Credit one hour. Not open to freshmen. Lecture, F 9. Farm Management Building 102. Lectures on marketing and closely related topics by nonresident lecturers. In charge of Professor SPENCER.

A discussion period, F 11–1, is open to graduate students and to advanced undergraduate students who obtain permission to register. Two hours credit is allowed those who take this period in addition to the lecture. Farm Management Building 102.

146. **The Organized Exchanges and Speculation.** First term. Credit two hours. Open to graduate students and seniors with adequate preparation. Recitations, T Th 8. Farm Management Building 102. Professor BOYLE.

Rural Economy

250. **Taxation.** Second term. Credit three hours. Open to juniors, seniors, and graduate students who have completed a beginning course in economics. Lectures, M W F 11. Farm Management Building 102. Professor Kendrick.

Rise of modern tax problems; how various governmental divisions in New York and other States get their tax revenues; the general-property tax; history, assumption, methods of administration and the special cases of personal property, farm, and forest taxation; mortgage taxes; taxation of cooperatives; income, inheritance, gasoline taxes, and the like; proposals for tax reform; problem of a proper distribution of the tax burden among the various state and local governmental units. The emphasis of the course is on state and local problems connected with rural taxation. Fee for materials, $1.

151. **Public Problems of Agriculture.** Second term. Credit two hours. Lectures, M W 12. Farm Management Building 102. Professor Warren.

A discussion of some of the more important problems of agriculture that involve collective or government action.

161. **Rural Economy, General Course.** Second term. Credit four hours. Prerequisite, Economics 1. Open to juniors, seniors, and graduate students. Lectures, M W F 8. Farm Management 102. Discussion groups one hour a week. Professor Boyle.

262. **Rural Economy, Elementary Course.** First term. Credit three hours. Prerequisite, Economics 1. Open to graduate students, and to seniors by special permission. Lectures, M W F 9, and individual conferences. Fernow 210. Professor Lauman and Mr. Graue.

A study of the factors underlying the present conditions in rural communities at home and abroad, and of forces at work in shaping the agriculture of the world, chiefly along economic lines.

263. **Rural Economy, Advanced Course.** Second term. Credit four hours. Prerequisite, course 262 or its equivalent. Lectures, M W F 9. Fernow 210. Professor Lauman.

A more extended study, primarily theoretical, of the general economic problems of agriculture.

269. **Rural Economy Seminary.** First and second terms. Primarily for graduate students, and for seniors by invitation. T 2.30. Fernow 126. Professor Lauman.

The year will be devoted to a study of the reports on agricultural conditions in the United States.

History of Agriculture

171. **History of Agriculture.** First term. Credit three hours. Open only to seniors and graduate students. Lectures, M W F 11. Fernow 210. Professor Lauman and Mr. Graue.

The important phases of the development of agriculture are considered historically. Special stress is laid on the rise of the agricultural classes, on agrarian problems, as well as on the beginnings of rational agriculture.

172. **History of Agriculture in the United States.** Second term. Credit three hours. Open only to seniors in all colleges and to graduate students. Lectures, M W F 11. Fernow 210. Professor Lauman and Mr. Graue.

This course deals with the land, its settlement, and its settlers in their economic, social, and political aspects; the technical development of agriculture; the beginnings of permanent agriculture; the rise and course of marketing problems and of the agrarian movements.

278. **Research in Rural Economy or History.** First and second terms. Credit two or three hours a term. For seniors who have done superior work in course 171 or 262, and for graduate students. Fernow 126. Professor Lauman.

279. **Agricultural History Seminary.** First and second terms. Primarily for graduate students and for seniors by invitation. Th 2.30. Fernow 126. Professor Lauman.

The year will be devoted to a study of von Thünen.

AGRONOMY

1. **The Nature and Properties of Soils.** First or second term. Credit five hours. Prerequisite, Chemistry 101 and Geology 100. Assignment to laboratory and recitation sections must be made at the time of registration. Lectures, M W F 9. Caldwell 100. One laboratory period, Caldwell 49. Two recitations, Caldwell 31. Professor BUCKMAN.

A comprehensive course dealing with the composition, properties, and plant relations of soils, with particular reference to the practical use of lime, fertilizers, and other means of maintaining soil fertility. Laboratory fee, $3.

3. **Practical Soil Management.** First term. Credit three hours. Prerequisite course 1. Lectures, M W 8. Recitation by appointment. Caldwell 100. Professor WORTHEN.

A course dealing with methods of soil utilization, including the use of lime, commercial fertilizers, stable manure, and green-manure crops, in agricultural practice. It includes a study of the influence of crop rotations and fertilizers on the productivity of soils, as shown by field experiments. Particular stress is placed upon factors essential for the practical utilization of New York soils.

11. **Production of Field Crops.** First or second term. Credit four hours. Prerequisite, Botany 1 or Biology 1. Lectures, M W 10. Recitation, F 10. Caldwell 100. Laboratory, M T or W 2–4.30. Assignment to laboratory sections must be made at time of registration. Caldwell 250. Assistant Professor COOPER.

A course dealing with the principal field crops of the United States, special emphasis being placed upon those grown in the Northeastern States. Cultural methods, crop rotations, fertilizer practices, soil and climatic adaptation, and the better varieties of the important crops are considered. Laboratory fee, $3.

107. **Soil Bacteriology.** Second term. Credit three hours. Prerequisite, course 1, Bacteriology 1, and Chemistry 210 and 225. Lecture, W 8. Caldwell 143. Laboratory, W and F 2–4.30. Caldwell 201. Professor J. K. WILSON.

A course in biological soil processes designed primarily for students specializing in soil technology. The laboratory work is supplemented by reports and by abstracts of important papers on the subject. Laboratory fee, $5.

201. **Soils, Advanced Lecture Course.** First term. Credit three hours. Prerequisite, course 1 and Chemistry 210 and 225. Students must consult Professor BIZZELL before registering for this course. Lectures, T Th S 8. Caldwell 143. Professor BIZZELL.

An advanced course designed primarily for students specializing in soil technology. The lectures deal with the important properties of soils from the theoretical and technical standpoints. Review of the literature and preparation of papers are important parts of the work.

202. **Soils, Advanced Laboratory Course.** First term. Credit three hours. For graduate students only. Prerequisite, course 1 and Chemistry 225 or its equivalent. Hours by appointment. Caldwell 201. Professor BIZZELL.

A course designed primarily for special training in methods used in soil investigation.

221. **Research.** Throughout the year. For graduate students only. Hours by appointment. Caldwell 350. Professors LYON, BIZZELL, BUCKMAN, and J. K. WILSON, and Assistant Professors B. D. WILSON and COOPER.

222. **Seminary.** Throughout the year, without credit. Required of graduate students taking work in the department. S 11–12.30. Caldwell 143.

ANIMAL HUSBANDRY

Students intending to specialize in animal husbandry are advised to register for courses 1 and 2 before taking the more advanced courses.

1. **Principles and Practice of Feeding Animals.** First term. Credit three hours. Lectures, T Th 10. Animal Husbandry Building A. One practice period, T W or Th 2–4.30, by appointment. Animal Husbandry Building. Professor SAVAGE and Mr. HARRISON.

The general principles of animal nutrition, including the study of feeding standards, the common grain and commercial feeds, the formulation of rations, and the like.

[101. **Principles of Animal Nutrition, Advanced Course.** Second term. Credit two hours. For advanced and graduate students. Prerequisite, course 1 and Veterinary Physiology 10. Professor MAYNARD.] Not given in 1927–28.

201. **Special Topics in Animal Nutrition.** First and second terms. Credit one hour. Open to graduate students only. Registration by appointment. Assigned readings on selected topics with weekly conferences. Time to be arranged. Professor MAYNARD.

A consideration of the experimental data on which the principles of animal husbandry nutrition are based, and a critical review of current literature.

2. **Principles of Animal Breeding.** Second term. Credit three hours. Lectures, T Th 9. Practice, F 2–4.30. Animal Husbandry Building A, and Judging Pavilion. Professor WING, Assistant Professor C. L. ALLEN, and Mr. MAXWELL.

A general outline of the principles of heredity as applied to the breeding of animals, with a study of animal forms, origin, and formation of breeds, crossing, and grading; an outline of the methods of registration; the study of records and pedigrees. Demonstrations, essays, and reports are required as supplementary to the lectures.

102. **Problems in Animal Genetics, Advanced Course.** First term. Credit three hours. Prerequisite, course 2 or Plant Breeding 1. Lectures T Th 11. Recitation period by appointment. Animal Husbandry Building. Professor HARPER and assistants.

Lectures, conferences, and reports, including statistical methods as applied to breeding animals. The work will consist largely of practice in making reports on statistical problems.

5. **The Horse.** Second term. Credit three hours. Lectures, T Th 11. Animal Husbandry Building A. Practice, W 2–5. Judging Pavilion. Professor HARPER and Mr. RHOAD.

A general course treating of the horse and the mule. Judging, scoring, care and management, economy in feeding, breeding, stable management, including harnessing, hitching, and the like. Origin, history, and development of the breeds of horses.

6. **Horse Training, Practical Course.** First term. Credit two hours. Prerequisite, course 5 and permission to register. Lecture, F 9. Animal Husbandry Building. Practice, in sections by appointment. Animal Husbandry Building and barns. Professor HARPER.

A practical course in the feeding, training, and stable management of horses.

10. **Dairy Cattle.** First term. Credit four hours. Lectures, M W 9. Practice, M T or Th 2–6, by appointment; under certain conditions credit may be withheld till after the beginning of the second term. Animal Husbandry Building A, Judging Pavilion, barns, and stables. Professor WING, Assistant Professor C. L. ALLEN, and Mr. MAXWELL.

Origin, history, and development of the breeds of dairy cattle; production of milk; economy of feeding, care, management, and sanitation of the dairy herd; maintenance of the herd; raising calves. Practice in judging, scoring, milking, feeding, stable management, and keeping records.

11. **Breed Study.** Second term. Credit one hour for each breed. Prerequisite, course 10. M 2–4.30. Animal Husbandry Building. Professor WING and Assistant Professor C. L. ALLEN.

An intimate study of the history and the development of family lines and individual records of the leading dairy breeds. Students may register for one or more breeds simultaneously, as follows:

11a. Ayrshire.
11b. Guernsey.
11c. Holstein-Friesian.
11d. Jersey.

12. **Swine.** Second term. Credit three hours. Lectures, T Th 10. Animal Husbandry Building B. Practice, T 2–4.30. Judging Pavilion. Assistant Professor HINMAN and assistants.

Origin, history, and development of the breeds of swine; herd management; practice in judging swine; and reports on assigned topics. This course consists of lectures, recitations, discussions, tracing of pedigrees, and field trips that give the student a knowledge of the management, production, and marketing of swine. Estimated cost of trips, $15.

13. **Beef Cattle.** First term. Credit three hours. Lectures, W F 10. Animal Husbandry Building B. Practice, W 2–4.30. Judging Pavilion. Assistant Professor HINMAN and assistants.

Origin, history, and development of the breeds of beef cattle; herd management. Feeding for fattening. Practice in judging. This course consists of lectures, recitations, discussions, reports, tracing of pedigrees, and field trips intended to give the student a knowledge of the management, production, and marketing of beef cattle. Estimated cost of trips, $20.

14. **Sheep.** First term. Credit three hours. Lectures, T Th 10. Animal Husbandry Building B. Practice, Th 2–4.30. Judging Pavilion. Assistant Professor HINMAN and assistants.

Origin, history, and development of the breeds of sheep; flock management. Feeding and fattening lambs. Practice in judging. This course consists of lectures, recitations, discussions, reports, tracing of pedigrees, and field trips intended to give a student a knowledge of the management, production, and marketing of sheep and lambs. Estimated cost of trips, $15.

20. **Meat and Meat Products.** First or second term. Credit three hours. Registration limited to forty. Laboratory assignment must be made at the time of registration. Lecture, M 8. Two laboratory periods a week, M T or W 2–4.30, and W 8–10.30, F 2–4.30, or S 8–10.30. Animal Husbandry Building B and Meat Laboratory. One required inspection trip to Buffalo and vicinity. Mr. SCHUTT.

A practical course in the slaughtering of farm animals, the cutting of carcasses, and the preparation and curing of meats.

27. **Advanced Judging, Dairy Cattle.** Second term. Credit one hour. Prerequisite, course 10. Saturdays after Easter recess. Hours by appointment. Successful students may also register for one hour in the succeeding fall term. Professor WING, Assistant Professor C. L. ALLEN, and Mr. MAXWELL.

Excursions to neighboring herds and preparation for stock-judging competitions. Attendance at the State Fair is required.

130. **Health and Disease of Animals.** First term. Credit three hours. Not open to freshmen or to those who have had no courses in animal husbandry. Lectures, M W F 11. Veterinary College. Professor BIRCH.

The course is designed to give the student a clear conception of the causes and nature of the diseases of animals, with suggestions for their prevention. Special attention is given to the methods of preventing the spread of the infectious and epizootic diseases. Such information as is practicable is given for the treatment of slight injuries and for first aid in emergencies.

131. **Horseshoeing.** Second term. Credit one hour. Limited to thirty seniors. W 2–4 or Th 10–12. Farriery, Veterinary College. Professor ASMUS.

240. **Seminary.** First and second terms. Required of all graduate students taking either a major or a minor subject in the department. Advanced undergraduates will be admitted by permission, and if a satisfactory thesis on an approved subject is presented, may receive not to exceed two hours credit. M 10. Departmental staff.

BACTERIOLOGY

1. **General Bacteriology.** First term. Credit six hours. Prerequisite, Chemistry 101. Lectures, recitations, and laboratory practice, M W F 2–5.30. Dairy Building 119 and 301. Professor SHERMAN and Mr. STARK.

An introductory course; a general survey of the field of bacteriology, with the fundamentals essential to further work in the subject. Laboratory fee, $10.

2. **Elementary Bacteriology.** Second term. Credit three hours. Prerequisite, Chemistry 101. Lectures, recitations, and laboratory practice, M W 2–5 or T Th 2–5. Dairy Building 119 and 301. Mr. STARK and Mrs. STARK.

A general elementary course adapted to the needs of students in Home Economics. Laboratory fee, $10.

3. **Elementary Bacteriology.** Second term. Credit two hours. Prerequisite, Biology 1 and Chemistry 101 and 880. Not accepted as prerequisite for advanced courses. Lectures, M W 10; recitation, F 10. Dairy Building 119. Professor SHERMAN.

A course designed for students in Institution Management. The subject matter considered is about the same as in course 2, but is given without laboratory practice.

4. **Agricultural Bacteriology.** Second term. Credit three hours. Prerequisite, Chemistry 101. Not accepted as a prerequisite for advanced courses. Lectures, M W F 9. Dairy Building 119. Professor SHERMAN.

The elements of bacteriology, with a survey of the relation of microorganisms to agriculture.

105. **Microbiological Methods.** First term. Credit four hours. Prerequisite, course 1. Lectures, recitations, and laboratory practice, T Th 2–5.30. Dairy Building 119 and 323. Mr. KNAYSI.

A study of some of the special methods used by the bacteriologist. The cytology of microorganisms. Special microscopic and staining techniques. The morphology, cultivation, and identification of the higher bacteria and other microorganisms which are of importance to the bacteriologist. Laboratory fee, $10.

106. **Dairy Bacteriology.** Second term. Credit four hours. Prerequisite, course 1. Lectures, recitations, and laboratory practice, T Th 2–5.30. Dairy Building 120 and 323. Professor SHERMAN and Mr. KNAYSI.

An advanced course for students in bacteriology or dairy industry. The relation of microorganisms to milk and milk products. The subject is treated from the standpoint of economic dairy bacteriology and also from the point of view of milk hygiene and sanitary control. Laboratory fee, $10.

107. **Soil Bacteriology** (Same as Agronomy 107). Second term. Credit three hours. Prerequisite, course 1, Agronomy 1, and Chemistry 210 and 225. Lecture, W 8. Caldwell 143. Laboratory, W F 2–4.30. Caldwell 201. Professor J. K. WILSON.

An advanced course in biological soil processes designed for students specializing in bacteriology or soil technology. The laboratory work is supplemented by reports and by abstracts of important papers on the subject. Laboratory fee, $5.

Pathogenic Bacteriology. (See the Announcement of the New York State Veterinary College.)

210. **Physiology of Bacteria.** First term. Credit two hours. Prerequisite, course 1, and at least one additional course in bacteriology. Lectures, T Th 8. Dairy Building 119. Professor RAHN.

An advanced course in the physiology of bacteria and the biochemistry of microbic processes.

211. **Taxonomy of Bacteria.** Second term. Credit two hours. Prerequisite, course 1 and at least one additional course in bacteriology. Lectures, T Th 8. Dairy Building 119. Professor RAHN.

An advanced course dealing with the natural groups and variability of bacteria, with a study of the systems of nomenclature and classification.

212. **Research.** First or second term. Credit one or more hours, by arrangement. For advanced students.

Special problems in any phase of bacteriology may be elected. Laboratory fee, $2 for each credit hour.

BOTANY

Students wishing instruction in special groups of plants or in special subjects should consult the department.

1. **General Botany.** Throughout the year. Credit three hours a term; both terms of the course must be completed to obtain credit, unless the student is excused by the department. Lectures, T Th 9 or 11. East Roberts 222. Laboratory, one period of two and one-half hours. Stone. Assignment to sections must be made at the time of registration. Professor PETRY, Mr. BURKHOLDER, Misses GORDON and JACKSON, and Messrs. ALLEN, ARNOLD, DEFRANCE, LAUBENGAYER, and others.

The fundamental facts and principles of plant life. A careful study of form, structure, and reproduction of representatives of the principal groups. Attention is given to life processes, particularly in the higher plants. Laboratory fee, $3.50 a term.

3. **Veterinary Botany.** Second term. Credit five hours. Lectures, M W 9. Laboratory, M F 2–4.30. Recitation, T 11. Stone, Botanical Laboratory. Assistant Professor MUENSCHER and Mr. ————.

A course designed to acquaint the student with those facts about plants of special value to the veterinarian. Special emphasis is placed on poisonous plants, fodder plants, weeds, and plants used in medicine. Laboratory fee, $5; deposit, $3.

13. **Trees and Shrubs.** First term. Credit three hours. Prerequisite, course 1 or its equivalent. Lecture, T 8. East Roberts 222. Laboratory or field work, M W or T Th 2–4.30. One all-day field trip is required. Stone, Botanical Laboratory. Assignment to laboratory sections must be made in the Botany office at the time of registration. Dr. MANNING.

The identification of trees and shrubs, in summer and in winter conditions. The laboratory work covering identification is done largely in the field. The work of the latter part of the term is a study of the taxonomy of woody plants. For all students wishing a detailed knowledge of trees and shrubs. Laboratory fee, $3; deposit, $3.

15. **Weeds and Weed Seeds.** First term. Credit three hours. Prerequisite, course 1 or its equivalent. Lecture, Th 8. Laboratory, T Th 2–4.30. Stone 204. Assistant Professor MUENSCHER and Mr. ————.

This course is designed to meet the needs of students of agriculture and others who wish to obtain a working knowledge of weeds and weed seeds. It will also aid persons intending to teach agriculture or nature study. Laboratory fee, $2; deposit, $3.

117. **Taxonomy of the Higher Plants.** Second term. Credit four hours. Prerequisite, course 1 or its equivalent. Lecture, M 9. Laboratory, M W F 2–5. Stone, Botanical Laboratory. Professor WIEGAND and Dr. MANNING.

A study of the kinds of seed plants and ferns, their classifications into genera, families, and orders, and field work on the local flora. Emphasis is placed on wild plants, but the more common cultivated plants receive some attention. The course is planned to follow course 1 and to furnish an introduction to the knowledge of the field botany and classification of the higher plants, in preparation for special work in various departments, and as an aid in teaching. Instruction is given in the preparation of an herbarium and of keys. Laboratory fee, $4; deposit, $3.

Students completing this course may arrange, under course 145, to pursue special advanced work in taxonomy.

219. **Advanced Taxonomy of Vascular Plants.** Second term. Credit two hours. Prerequisite, course 117 or its equivalent. Hours to be arranged. Stone. Professor WIEGAND.

A special seminary on topics of particular interest to the taxonomist. Current literature and current problems will constitute a part of the program.

22. **Microscopic Wood Technology.** First term. Credit one hour. Prerequisite, courses 1 and 13 or their equivalent. Laboratory, M 2–4.30. A few lectures will be given during the laboratory periods. Stone, Botanical Laboratory. Professor PETRY.

This course is planned for students in wood technology and in general forestry. The object is to familiarize the student with the microscopic anatomy of wood. The course includes the identification of commercially important woods; a study of types of wood structure as related to uses, such as wood pulp; and the structure of wood as affecting its impregnation with preservatives and other chemicals. Laboratory fee, $2.

123. **Plant Anatomy.** First term. Credit four hours. Prerequisite, course 1 or its equivalent, and permission to register. Lecture and conference, T 9. Laboratory, T 10–12.30; Th S 9-11.30. Stone 203. Professor EAMES and Miss JACKSON.

This course is designed to give a working acquaintance with the internal morphology of vascular plants, and emphasis is placed on practice in interpretation and determination of material. The course is planned primarily for students in applied fields of botany, such as pathology, pomology, or genetics. Students desiring a less detailed training in this subject should take course 126. Laboratory fee, $5.

124. **Cytology.** Second term. Credit four hours. Prerequisite, course 1 or Zoology 1, and preferably course 126. Lectures and conferences, T Th 9. Laboratory, T Th or W F 10–12.30. Stone 205. Professor L. W. SHARP and Dr. MCCLINTOCK.

This course deals with the subject matter, literature, and problems of cytology. The survey of the field is sufficiently inclusive to make the course of value to advanced students in the various branches of biology. The conference hour is devoted to a discussion of topics suggested by the laboratory observations and assigned reading, and, during the latter part of the term, to the review of new literature. Laboratory fee, $5.

224. **Seminary in Cytology.** First term. Hours to be arranged. Professor L. W. SHARP.

[126. **Morphology of Vascular Plants.** First term. Credit four hours. Prerequisite, course 1 or its equivalent. Professors EAMES and PETRY and Miss JACKSON.] Not given in 1927–28.

An advanced course in the comparative morphology and life histories of vascular plants. Laboratory fee, $5.

Comparative Morphology of Fungi. Given in the Department of Plant Pathology.

227. **Seminary in Morphology.** Throughout the year. Hours to be arranged. Professor EAMES.

31. **Plant Physiology.** First or second term. Credit four hours. Prerequisite, course 1. Lectures and recitations, T Th 10. First term, Caldwell 143; second term, Roberts 292. Laboratory, T Th 2–4.30 or W F 2–4.30. Stone 21. Assignment to laboratory sections must be made at the time of registration. First term, Professor KNUDSON, Assistant Professor HOPKINS, and Mr. SCHULTZ; second term, Professor O. F. CURTIS, Assistant Professor HOPKINS, and Mr. SCHULTZ.

This course is designed to acquaint the student with the general principles of plant physiology. Topics such as water relations, photosynthesis, translocation, digestion, respiration, mineral nutrition, growth, and reproduction are studied in detail; in both laboratory and recitations emphasis is placed on discussion of the principles taught and their applications. Laboratory fee, $4; deposit, $3.

231. **Plant Physiology, Advanced Lecture Course.** Throughout the year. Credit three hours a term. Prerequisite, training in botany and chemistry, to be determined in each case by the department. Recommended for seniors and graduate students. Lectures, M W F 10. Roberts 292. Professors KNUDSON and O. F. CURTIS.

232. **Plant Physiology, Advanced Laboratory Course.** Throughout the year. Credit three hours a term. Prerequisite or parallel, course 231. Laboratory, M 2–5, S 8–12.30. Stone 21. Professors KNUDSON and O. F. CURTIS and Assistant Professor HOPKINS. Laboratory fee, $5; breakage deposit, $2.

233. **Seminary in Plant Physiology.** Throughout the year. Required of graduate students taking work in the department. Conference, F 11. Stone. Professors KNUDSON and O. F. CURTIS and Assistant Professor HOPKINS.

The presentation and discussion of current contributions to plant physiology; reports on the research problems of graduate students and members of the staff.

[141. **History of Botany.** Second term, without credit.] Not given in 1927–28.

A course of lectures given by various members of the staff with the purpose of acquainting advanced students of botany with the historical development of their science.

145. **Special Problems in General Botany, Taxonomy, Histology, and Cytology.** Throughout the year. Credit not less than two hours a term. By appointment. Professors WIEGAND, EAMES, L. W. SHARP, and PETRY and Assistant Professor MUENSCHER.

Students engaged in special problems or making special studies may register in this course. They must satisfy the instructor under whom the work is taken that their preparation warrants their choice of problem. The laboratory fee depends on the nature of the work and on the number of credit hours.

DAIRY INDUSTRY

Students intending to specialize in Dairy Industry, are urged to elect Chemistry 210, 225, and 375, and Bacteriology 1, in order that these courses may be completed by the end of the first term of the junior year.

1. **Testing and Composition of Dairy Products.** First or second term. Credit three hours. Lectures, T Th 11, Dairy Building 218; practice, M 2–5 or S 8–11, Dairy Building 209. Professor TROY and Assistant Professor MCINERNEY.

The topics considered are secretion and composition of milk, the lactometer, the Babcock test for fat, acid tests, moisture tests, salt tests, preservative tests, and adulterations. Laboratory fee, $5.

101. **Analysis and Control of Dairy Products.** Second term. Credit three hours. Prerequisite, course 1 and Chemistry 101; should be preceded by Chemistry 210 and 225. Lecture, T 2, Dairy Building 218; practice, T 3–6 and Th 2–5, Dairy Building 209. Professor TROY and Assistant Professor MCINERNEY.

The application of chemical methods to commercial dairy practice. Analysis by standard chemical and factory methods; standardization and composition control; tests for adulterants and preservatives. Laboratory fee, $5.

102. **Market Milk and Milk Inspection.** Second term. Credit four hours. Must be preceded or accompanied by course 1; should be preceded or accompanied by Bacteriology 1 or its equivalent. Lectures, T Th 12. Dairy Building 218; practice, W 1–6 or S 8–1. Dairy Building 146. Professor H. E. Ross and Assistant Professor AYRES.

Attention is given to the production and control of market milk, with special reference to its improvement; milk as food; shipping stations; transportation and sale; pasteurizing; standardizing; clarification; certified milk; milk laws; commercial buttermilk; methods of cooling; harvesting and storage of ice; duties of milk inspectors; apparatus and buildings. The practice includes visits to dairies in the vicinity of Ithaca. A required two-day inspection trip in the neighboring counties may be arranged. Laboratory fee, $5.

103. **Milk Products.** First term. Credit five hours. Prerequisite, course 1. Lectures, recitations, and laboratory practice, T Th 1–6. Dairy Building 120. Professor GUTHRIE and Assistant Professor PRICE.

The principles and practice of making butter, cheese, and casein, including a study of the physical, chemical, and biological factors involved. Consideration is also given to commercial operations and dairy-plant management. Laboratory fee, $5.

104. **Milk Products.** Second term. Credit five hours. Prerequisite, course 1; should be preceded or accompanied by course 101. Lectures, recitations, and laboratory practice, F 1–6 and S 8–1. Dairy Building 120. Assistant Professor PRICE.

The principles and practice of making condensed and evaporated milks, milk powders, ice cream, and by-products, including a study of the physical, chemical, and biological factors involved. Laboratory fee, $5.

105. **Dairy Chemistry.** Second term. Credit three hours. Prerequisite, qualitative and quantitative analysis and organic chemistry. Lectures, M W F 8. Dairy Building 119. Professor P. F. SHARP.

A consideration of milk and dairy products from the physico-chemical point of view.

Dairy Bacteriology. (See Bacteriology 106.)

201. **Research.** First or second term. Credit one or more hours, by arrangement. For advanced students. Dairy Building. Departmental staff.

Special problems in any line of dairy work may be elected. Laboratory fee, $2 for each credit hour.

202. **Seminary.** Throughout the year. Without credit. Required of graduate students taking work in the department; open to undergraduate students taking advanced work. Every other Monday, 5.30–8. Dairy Building. Professor SHERMAN.

DRAWING

1. **Mechanical Drawing.** First or second term. Credit three hours. Lectures during laboratory periods. Laboratory: section 1, W F 2–4.30, or section 2, Th 2–4.30, and S 10.30–1. Two additional practice periods to be arranged to suit the schedule of the student. Dairy Building, Fourth Floor. Work will begin with the first laboratory period. Students must apply at the Rural Engineering Department office before that period regarding materials required. Assistant Professor REYNA.

A course dealing with the principles and practices involved in the art of conveying information by graphical methods. The work includes use of instruments; lettering; orthographic projection involving plans, elevations, and sections; isometric drawing or conventionalized perspective; and the practical applications of these principles to simple problems. This course may well be taken early in the course of any one interested in taking work in rural engineering.

2. **Mechanical Drawing.** First term. Credit three hours. Open only to students specializing in the institution-management course. Lectures during laboratory periods. Laboratory: T 2–4.30 and S 8–10.30. Additional practice periods to be arranged to suit the schedule of the student. Dairy Building, Fourth Floor. Work will begin with the first laboratory period. Students must apply at the Rural Engineering Department office before that period regarding materials required. Assistant Professor REYNA.

5. **Mechanical Perspective Drawing.** First or second term. Credit two hours. Lectures during laboratory periods. Laboratory, T Th 11–12 and two two-hour practice periods by arrangement. Dairy Building, Fourth Floor. Assistant Professor REYNA.

A course in perspective representation by mechanical methods, embracing all the fundamentals necessary for practical application to architectural or shop problems.

11. **Free-Hand Drawing.** First and second terms. Credit first term, from two to four hours; second term, from three to four hours. Students must consult the professor in charge before registering for the course. Lectures during practice. Practice by appointment, M T W F 9–1 and Th 2–5. East Roberts 371. Assistant Professor GARRETT.

An elementary course for the development of graphic expression applicable to scientific studies. Of special value to those who expect to enter the field of teaching, nature study, or biological research.

One hour of credit in free-hand drawing means three hours of actual practice. The drawing periods must be at least two actual hours in length.

12. **Free-Hand Drawing, Advanced Course.** First and second terms. Credit first term, from two to four hours; second term, from three to four hours. Pre-

requisite, four hours of course 11. Students must consult the professor in charge before registering for the course. Lectures during practice. Practice, same as course 11. East Roberts 371. Assistant Professor GARRETT.

13. **Pen and Ink Drawing.** First and second term. Credit first term, from two to four hours; second term, from three to four hours. Prerequisite, four hours of course 11, and four hours of course 12. Practice, same as course 11. Students must consult the professor in charge before registering for the course. East Roberts 371. Assistant Professor GARRETT.

14. **Water Color.** First and second terms. Credit first term, from two to four hours; second term, from three to four hours. Prerequisite, four hours of course 11 and four hours of course 12. Practice, same as course 11. Students must consult the professor in charge before registering for the course. East Roberts 371. Assistant Professor GARRETT.

ENTOMOLOGY AND LIMNOLOGY

BIOLOGY

1. **General Biology.** Throughout the year. Credit three hours a term. First term prerequisite to the second. Not open to students who have had college courses in zoology and botany. Lectures, M W 9 or 11. East Roberts 222. One practice period a week, T F 8–10.30, or daily except S, 2–4.30. Roberts 302. Additional sections will be provided if necessary. Students must report to the biology laboratory, Roberts 302, for assignment to laboratory sections. Professor CLAASSEN, Mr. WOLF, and assistants.

An elementary course designed to acquaint the general student with the main ideas of biology through selected practical studies of the phenomena on which biological principles are based.

The work of this course begins with a study of the interdependence of organisms. This is followed by a study of the structure, physiology, and general behavior of a series of plants and animals, ranging from the simple to the more highly developed forms. The study of the simpler plants is closely associated with that of the simpler animals to show common features in the development of plant and animal life. The plants which are next studied include the mosses, liverworts, ferns, and seed plants, and the animals include hydra, earthworm, grasshopper, and frog. This is followed by consideration of organization and phylogeny, heredity and variation, natural selection and adaptation, segregation and mutation, the life cycle, metamorphosis and regeneration, and the responsive life of organisms. Laboratory fee, $3.50 a term.

[7. **Biology of the Human Species.** First term. Credit one hour. Lectures, T Th 11. Goldwin Smith A. Not open to freshmen. Should preferably follow Biology 1 or its equivalent. Professor NEEDHAM.] Not given in 1927–28.

A general and elementary account of the origin and development of man, of the evolution of the responsive life, of the main phenomena of human inheritance, of the effect upon population of the alteration of environment by the processes of civilization, of the evolution of the social organism, and of social control.

75. **Laboratory Methods in Animal Biology.** Second term. Credit three hours. Prerequisite, major work in biology. Professor CLAASSEN in charge. F 10–12.30, 2–4.30, and one lecture period by appointment.

For seniors whose upperclass group is in the field of biology, and for graduates who expect to teach or to follow some phase of zoology as a profession. This course includes such subjects as laboratory equipment; collecting, preservation, and storage of materials; rearing of cultures; modelling in wax; injection of blood vessels and embalming; chart making, and photography of animals including the preparation of lantern slides. Laboratory fee, $4.

GENERAL ENTOMOLOGY

Courses 12, 15, 21, and either 31 or 31a are required of all students who plan to take advanced work or to major in entomology. A reading knowledge of German and French is also essential for advanced work in this department. The following courses have no prerequisites: 1, 10, 15, and 21.

1. See Biology, course 1.

11. **The Ecology of Insects.** First term. Credit three hours. Prerequisite, Biology 1, or Zoology 1, and Entomology 12. Lecture, Th 9. Roberts 392. Practical exercises, Th 2–4.30, and one other by appointment. Professor CLAASSEN and Mr. P. R. NEEDHAM.

A general course in the study of the lives of insects in relation to their environment. Practical studies are made of the activities of insects and of the rôle that they play in different natural associations. Observations are made on the relations between their structures and instincts and the situations in which they live, and on many of the ways in which they find a living and establish homes. Laboratory fee, $2.50.

12. **General Entomology.** First term. Credit three hours. Prerequisite, Biology 1, Zoology 1, or Botany 1. Lectures, W F 9. Roberts 392. Professor HERRICK. Practical exercise, T W Th or F 2–4.30, or S 8–10.30. Roberts 392. Professor HERRICK, Dr. WEHRLE, and Mr. HARWOOD.

This course embraces lectures on the characteristics of orders, suborders, and the more important families, and on the habits of representative species. The practical exercises include a study of the structure of insects and practice in their classification. The lectures only (two hours) may be taken by those who have had courses 21 and 31. Laboratory fee, $2.50.

15. **Wing Venation and Evolution.** First or second term. Credit one hour. Required of all students who plan to take advanced work in entomology. Open to freshmen. S 11 and two additional hours on T Th or S mornings. Roberts 301. Professor BRADLEY and Mr. FLETCHER.

A laboratory study of evolutional series as illustrated by progressive modification of the wings of insects. Laboratory fee, $1.50.

138. **The Technics of Biological Literature.** First term. Credit three hours. Lectures, recitations, and library work. M W F 11. Roberts 392. Professor BRADLEY.

A critical study of the biologists' works of reference. Practice in the use of generic and specific indices, of bibliographies and in the preparation of the latter; methods of preparing technical papers for publication. The rules of nomenclature, including the formation of specific names.

This course is of a technical nature, and is intended to aid students specializing in entomology and zoology in their contact with literature.

139. **Entomological Reading in Foreign Languages.** French first term, German second term. Two hours a week, by appointment. Without credit. Open to advanced students in entomology who have an elementary knowledge of the language. Professor JOHANNSEN.

INSECT MORPHOLOGY

21. **Elementary Morphology of Insects.** First or second term. Credit three hours. Required of all students who plan to take advanced work in Entomology. Hours by appointment. Roberts 391. Professor JOHANNSEN and Mr. HERVEY.

This course deals with the external and the internal anatomy of several common species of insects. Laboratory fee, $2.

122. **Insect Morphology.** First and second terms. Credit two hours. Prerequisite, courses 21, and 12 or 31a. Lectures, assigned reading, and reports. T Th 10. Roberts 392. Professor JOHANNSEN.

This course deals with the anatomy, histology, embryology, and post-embryonic development of insects.

124. **Histology of Insects.** First or second term. Credit two hours. Must be preceded or accompanied by course 122. Laboratory, two periods a week, by appointment. Roberts 391. Professor JOHANNSEN.

Technique in histological methods as applied to insects. Laboratory fee, $3.

Insect Taxonomy

10. **Entomotaxy.** Second term. Credit two hours. Open to freshmen. Laboratory and field work, M T 2–4.30. Roberts 301. Professor Bradley.

Methods of collecting insects and preserving them for study, together with other matters of technique. Rough identification of insects collected during the field work. Three all-day field trips will be required. Laboratory fee, $4.50.

31. **Taxonomy of Insects.** First and second terms. Credit three hours a term. Prerequisite, courses 15 and 21. The first term of course 31 may be taken simultaneously with Entomology 15. Lecture, W 10. Roberts 392. Laboratory, W F 2–5. Roberts 301. Professor Bradley, Dr. Forbes, and Mr. Fletcher.

A survey of the classification of insects and of the more important and common species, with a study of the characters by which they may be recognized. Laboratory fee, $4.50.

31a. **Elementary Taxonomy of Insects.** First or second term. Credit one hour. Must be preceded or accompanied by courses 15 and 21. One laboratory period of three hours during T Th or S mornings, by arrangement. Roberts 301. Professor Bradley and Mr. Fletcher.

All students who plan to take advanced work in entomology should take this course, or, if preferred, course 31.

Elementary practice in the determination of the families and orders of insects, designed for students who wish a brief survey of insects, but who are not planning to carry further their entomological work. Laboratory fee, $1.50.

135. **Lepidoptera.** First term. Credit there hours. There is no formal prerequisite, but students must be familiar with elementary entomology and used to handling insects. They should satisfy the instructor on this point before electing the course. Lecture, M 9. Roberts 301. Laboratory, M and W by appointment. Roberts 301. Dr. Forbes.

Identification and classification of Lepidoptera, including their caterpillars; with practice in the technique of preparation involved. Mimicry and other biological problems best illustrated by the Lepidoptera. Laboratory fee, $4.50.

Economic Entomology

41. **General Economic Entomology.** Second term. Credit three hours. Prerequisite, course 12. Lectures, W F 9. Roberts 392. Professor Herrick. Practical exercise, T W Th or F 2–4.30. Roberts 392. Professor Herrick, Dr. Wehrle, and Mr. Harwood.

This course includes lectures on the life histories and habits of injurious insects, together with a consideration of the most approved methods of preventing their ravages. The practical exercises include a study of the more important insecticides and as many of the commoner pests as time will permit. Several excursions will be made to observe the insects in the field. Laboratory fee, $2.

241. **Advanced Economic Entomology and Insectary Methods.** Second term. Credit three hours. Open only to qualified seniors and graduate students. Lecture, Th 11. Roberts 392. Seminary, Th 2–4.30. Field and laboratory work by appointment. Insectary. Professor Matheson.

Economic problems connected with applied entomology are discussed and reported on, and field observations are made. Experimental methods in breeding, photographing, investigating, and controlling insects are discussed and studied. Designed for advanced students in entomology who desire to fit themselves for experiment-station work. Laboratory fee, $2.50.

43. **Forest Insects.** Second term. Credit two hours. Prerequisite, first term of course 12. Lecture, Th 8. Laboratory, S 8–10.30. Roberts 392. Dr. Wehrle.

A course dealing with insects injurious to forest and shade trees, together with a consideration of the best methods of controlling their ravages. Laboratory fee, $1.50.

Parasitology and Medical Entomology

51. **Parasites and Parasitism.** First term. Credit two hours. Prerequisite, General Biology 1 or Zoology 1. Lecture, T 9. Roberts 301. Practical exercise, M or T 2–4.30. Professor Matheson and Mr. Stone.

A consideration of the origin and biological significance of parasitism, and of the structure, life, and economic relations of representative parasites. Laboratory fee, $2.

52. **Medical Entomology.** Second term. Credit two hours. Prerequisite, Zoology 1 or Biology 1. Lecture, T 9. Roberts 392. Practical exercise M or T 2–4.30. Roberts 301. Professor Matheson and Mr. Stone.

This course deals with insects and other Arthropods which are the causative agents of disease in man and animals or are the vectors or intermediate hosts of disease-producing organisms. Laboratory fee, $2.

Apiculture

(Advanced and graduate students taking courses 122, 123, and 124 and who are specializing in Apiculture are permitted to use the honeybee as illustrative material in the laboratory work of these courses.)

61. **General Beekeeping.** Second term. Credit three hours. Prerequisite, course 12. Lectures, T Th 9. Roberts 292. Practical exercises, W2–4.30. Roberts 301. Professor Phillips.

This course is intended to afford a general knowledge of the fundamentals of beekeeping, including the various phases such as life history, instincts, and general behavior of bees, their products, the sources of honey, the rôle of bees in cross-pollination, the equipment of the apiary, wintering problems, the diseases of bees, and the rearing of queens. Laboratory fee, $2.50.

261. **Advanced Beekeeping.** First and second terms. Credit four hours a term. Open only to qualified seniors and graduate students. T Th 11–1. Roberts 271. Professor Phillips.

A study of general problems of beekeeping. This course is technical and covers investigations, especially those of a scientific character, in all phases of apiculture. Special consideration is given to the study of beekeeping regions, with particular reference to conditions in New York. Designed for advanced students who expect to specialize in teaching or in research in apiculture.

262. **Apicultural Literature and Its Technics.** First and second terms. Credit three hours a term. Open only to qualified seniors and graduate students. Prerequisite, a reading knowledge of either French or German. T 2–5. Roberts 271. Professor Phillips.

This course is planned to acquaint the student with the current technical and practical literature of beekeeping, each student being assigned certain journals for the abstracting of all important papers which they contain. Practice in the use and preparation of bibliography and abstracts and in the preparation of technical papers for publication. Designed only for advanced students in apiculture.

Limnology

71. **General Limnology.** Second term. Credit three hours. Open to students who have taken or are taking courses 1 and 12, or the equivalent. Lecture, Th 9. Roberts 392. Laboratory, Th 2–4.30, and one period by appointment. Roberts 492. Professor Claassen, and Mr. P. R. Needham.

An introduction to the study of the life of inland waters. Aquatic organisms in their qualitative, quantitative, seasonal, and ecological relations. The course includes one all-day trip, taken on some Saturday in May. Laboratory fee, $2.50.

73. **Aquiculture.** First term. Credit three hours. Prerequisite, course 1 or Zoology 1. Lectures, M W F 12. Roberts 392. Professor Embody.

An exposition of the basic principles and cultural methods for propagating useful aquatic organisms, with special reference to fishes. The lectures cover such subjects as migration, spawning habits, natural and artificial foods, growth, assessment of age; cultural procedure for trout, bass, and other American fishes; European carp culture; commercial propagation of goldfish; financial aspects of

fish culture, and the work of governmental agencies in conserving our fishery resources.

74. **Fish Culture.** Second term. Credit two or three hours. Must be preceded by course 73. T 2–4.30, S 10.30–1. Roberts Hall and Experimental Hatching Station. Professor EMBODY.

A laboratory and field course, designed to give practice in hatchery methods, pond management, the study of natural conditions suitable for the maintenance of fish life, the evaluation of streams and lakes, and stocking procedure. An all-day excursion to one of the state fish hatcheries will be required. The expense should not exceed $10. Laboratory fee, $2.50 a credit hour.

RESEARCH

300. **Research.** Throughout the year. Credit three or more hours a term. Prerequisite, permission to register from the professor under whom the work is to be taken. Roberts.

300a. **Insect Ecology and Limnology.** Professors NEEDHAM and CLAASSEN.
300b. **Insect Morphology.** Professor JOHANNSEN.
300c. **Taxonomy.** Professor BRADLEY and Dr. FORBES.
300d. **Economic Entomology.** Professors HERRICK and MATHESON.
300e. **Medical Entomology and Parasitology.** Professor MATHESON.
300f. **Apiculture.** Professor PHILLIPS.
300g. **Aquiculture.** Professor EMBODY.
300h. **Arachnology.** Professor C. R. CROSBY.

SEMINARY

Seminary. Throughout the year. M 4.45–5.45. Roberts 392.

The work of an entomological seminary is conducted by the Jugatae, an entomological club which meets for discussion of the results of investigations by its members.

EXTENSION TEACHING

101. **Oral and Written Expression.** First term. Credit two hours. Open to juniors and seniors, and to others by arrangement. The number in each section will be limited. Students will consult Assistant Professor PEABODY for assignment to sections. Lectures and practice, M W 9, M F 11, W F 10, or T Th 11, Roberts 131; T Th 10, Roberts 292. Criticism, by appointment, daily, 8–1. Professors EVERETT and WHEELER and Assistant Professor PEABODY.

Practice in oral and written presentation of topics in agriculture, with criticism and individual appointments on the technique of public speech. Designed to encourage interest in public affairs, and, through demonstrations and the use of graphic material and other forms, to train for effective self-expression in public. Special training is given to competitors for the Eastman Prizes for Public Speaking and the Farm Life Challenge Contest. (See page 17.)

102. **Oral and Written Expression.** Second term. Credit two hours. Prerequisite, course 101, of which course 102 is a continuation. Part of the work of course 102 is a study of parliamentary practice. Lectures and practice, W F 10, T Th 9, T Th 10, or M F 11. Roberts 131. Criticism, by appointment, daily, 8–1. Professors EVERETT and WHEELER and Assistant Professor PEABODY.

103. **Extension Organization, Administration, and Policy.** First term. Credit two hours. Open to graduate students and seniors, and to juniors by special arrangement. Lectures and written exercises based on field work. W F 10. Roberts 92. Professor WHEELER and Mr. SIMONS.

This course deals with extension organization and administration agencies, and policies, as exemplified primarily in the State of New York. It is designed to familiarize students with extension principles as well as practices. It is intended not only for the prospective county agent or other extension worker in agriculture and home economics, but also for those who are preparing for effective service as citizens in rural communities. Students submit reports based on personal visits to county farm and home bureau offices and committeemen, offices of leaders

of county agents, the college scheduling office, and college specialists, and on attendance at several types of extension meetings. The expense of these visits varies with the student's own selection of places; it may be kept within $5 or $10.

104. **Advanced Oral Expression.** Second term. Credit two hours. Prerequisite, courses 101, 102, and 103 or Home Economics Extension 100. Hours to be arranged. Assistant Professor PEABODY.

An advanced course of study and practice in oral expression as directly related to the needs of the county agent, the home demonstration agent, the junior club leader, and the extension specialist.

15. **Agricultural Journalism.** First term. Credit three hours. Open only to those who have passed the required hours in English with an average grade of C, or better. T Th S 10. Fernow 122. Professor BRISTOW ADAMS.

This course is intended to give the principles of news writing, largely in connection with agricultural extension work and for prospective county agricultural and home demonstration agents; it is also intended to be of value to those who may wish to undertake the writing of agricultural bulletins.

117. **Agricultural News Writing.** First term. Credit two hours. No credit for less than two terms. Prerequisite, course 15 or English 68, Th 2–4. Roberts 92. Professor BRISTOW ADAMS.

This course requires the equivalent of laboratory work in practical news writing for publication, on agricultural topics in rural and agricultural journals, and includes criticisms, discussions, and consultations on actual problems in agricultural journalism.

118. **Agricultural News Writing.** Second term. Credit two hours. Th 2–4. Roberts 92. Professor BRISTOW ADAMS.

A continuation of course 117.

[119. **The Country Newspaper.** First term. Credit two hours. Prerequisite, course 15 and Rural Social Organization 11. Professor BRISTOW ADAMS.] Not given in 1927–28.

A study of the country newspaper, its problems, its make-up, and its place as a factor in rural life in New York.

120. **Agricultural Information Service.** Second term. Credit two hours. Prerequisite, course 15. M W 10. Roberts 92. Professor BRISTOW ADAMS.

Advance information, or publicity, in connection with agricultural work; the principles of advertising; the uses and abuses of publicity; its forms, principles, and effects, including the use of various forms of information in print, such as drawings, photographs, charts, posters, and other similar material in agricultural extension.

FARM PRACTICE

The farm-practice requirement is forty points, twenty of which must be obtained by actual farm work. (See page 22.)

Students entering prior to September, 1927, and taking courses offered in the various departments of the College which include laboratory periods that familiarize them with the materials and methods of the farm, will be given one point toward the farm-practice requirement for each hour of university credit obtained in such laboratory work.

The Office of Farm Practice will assist students in getting work on farms during vacations and at other times, and will supervise and keep records of the work.

Students should consult the office in regard to work on farms.

The office will also be glad to assist those students who have completed the farm-practice requirement in obtaining places on farms where they can gain wider experience.

1. **Farm Practice.** First and second terms. Without credit toward graduation, but giving credit toward the farm-practice requirement, depending on the amount and quality of the work done. Hour and place, by appointment. Mr. WOOD and assistants.

A course designed to assist those students who enter with little or no farm experience. Students will have an opportunity to hitch, harness, and drive horses, and to familiarize themselves with the use of the common farm tools. Admission

to this course will be determined by the results of the farm-practice tests. This course should be taken by all new students who have had limited farm experience.

FLORICULTURE AND ORNAMENTAL HORTICULTURE

Instruction in floriculture is planned for the following classes of students: (1) those who intend to make some branch of commercial flower growing their life work; (2) those who plan to enter a retail business; (3) those who are interested in amateur flower growing for pleasure and home decoration; (4) those who plan to take up some line of work on private estates or in city parks. Courses 121 and 122 should not be elected until courses in botany, soils, plant physiology, plant pathology, plant breeding, and economic entomology have laid a broad foundation on which to build the scientific principles of commercial flower growing.

Instruction in ornamental horticulture is planned to meet the requirements of students for (1) work in the propagation of all types of ornamental plants; (2) nursery practice; (3) plant materials for ornamental planting about the home grounds, village squares, and other public properties, with particular reference to rural districts; (4) the use of plants in landscape planting; (5) the keeping of golf courses.

1. **Woody-Plant Propagation.** First and second terms. Credit three hours. Must be accompanied or preceded by Botany 1. Lecture, T 12. Practice, Th 2–5, and S 8–10. Greenhouses and nurseries. Assistant Professor HUNN.

This course is planned for the general student, for those who desire a side-line business, and for those who intend to specialize in the nursery profession. It consists of a study of elementary methods of woody-plant propagation and of the care of the plant stocks produced. It includes elementary nursery practices applicable to the home grounds and to small florists' enterprises, and emphasizes the practical handling and maintenance of shrubs and trees. All members of the class are required to participate in an excursion to the Geneva nurseries on Saturday, May 12. Laboratory fee, $3.

2. **Advanced Woody-Plant Propagation, and Commercial Practices.** First and second terms. Credit two hours. Prerequisites, course 1 and Chemistry 101; to be accompanied or preceded by Plant Physiology 31. Laboratory, F, 11–1; 2–5. Greenhouses and Nurseries. Assistant Professor HUNN.

A study of commercial propagation problems and the use of greenhouses, frames, and seedbeds. Propagation of plants by seeds, cuttings, grafting, and other methods, are studied. The course considers the adaptation of the latest scientific knowledge concerning the propagation of plants to the securing of larger and more dependable output of plant stocks. The course will further emphasize the care of these plant stocks from the propagation bench to the nursery. Students will be required to participate in an excursion to Newark, New York, on November 18 and in an Easter trip to Yonkers, New York, Rutherford, New Jersey, and to other nurseries in that vicinity. Laboratory fee, $3.

[3. **Principles and Methods of Nursery Practice.** First and second terms. Credit two hours. Prerequisite, course 2 and Agronomy 1. Two laboratories.] Not given in 1927–28.

Designed to meet the needs of students who intend to specialize in the commercial growing of ornamental nursery plants. It takes up the selection and adaptation of nursery lands, the cultural care of nursery plants, and the practices employed in placing this material in the hands of the consumer. Special consideration is given to the economics of the industry, the sales, nursery organizations, and the relation of the nursery business to landscaping enterprises.

5. **Amateur Floriculture.** Second term. Credit three hours. Lectures, M W 11. Countryman Building. Practice, M 2–4.30. Greenhouses. Miss MINNS.

The culture, in the home, of potted plants suitable for window gardening and for outdoor home gardening. The course includes a study of containers, soils, fertilizers, and insecticides; also, the preparation and planting of flower beds. It is planned primarily for students in home economics, but is open to any one desiring information regarding simple methods of plant culture.

6. **Garden Flowers.** Second term. Credit three hours. Prerequisite, course 11 or 5. Lectures, T Th 9. Registration limited to fifteen students. Countryman Building. Lectures, discussions, and practice, W 2–4.30. Greenhouses and gardens. Miss MINNS.

A study of the identification and culture of annuals, herbaceous perennials, and garden roses. The aim is to give the student an intimate knowledge of those forms of annual and herbaceous plants that may be used in garden planting, either on home grounds or in public parks. An excellent collection of plant material is available for demonstration work in this course. Students are strongly advised to follow this course with the one given in the summer session. All members of the class will be required to participate in an excursion to the Thompson estate at Canandaigua, on May 30. Laboratory fee, $2.

7. **Elementary Woody-Plant Materials.** First or second term. Credit three hours. Open for general election. Lecture, W 9. Laboratory and field trips, T Th 2–5. East Roberts 7. Professor R. W. CURTIS.

A brief study of the identification and characteristics of a selected list of the trees, shrubs, and vines for landscape planting. Laboratory fee, $2.

8. **Advanced Woody-Plant Materials.** Second and first terms. Inclusion of the summer school is not required but is strongly advised. Credit three hours a term. Intended for advanced and graduate students. Registration by permission of the department. Lecture, Th 9. Laboratory and field trips, M W 2–5. East Roberts 7. Professor R. W. CURTIS.

A study of the trees, shrubs, and vines used in landscape planting and in nursery work. All members of the class will be required to participate in an excursion to Rochester, on June 1. Laboratory fee, $2.

11. **Principles and Methods of Greenhouse Practice.** First term. Credit four hours. Prerequisite to courses 6, 12, 121, 122, and 125. Lectures, M T Th 9. Countryman Building. Practice, T 2–4.30. Greenhouses. Professor WHITE.

A course intended to acquaint students with general floricultural methods and the scientific principles governing the propagation and culture of flowers. This is an elementary course in commercial flower growing. Laboratory fee, $2.50.

12. **Greenhouse Construction.** Second term. Credit two hours. Prerequisite, course 11. Lectures and discussions, M 12. Countryman Building. Laboratory, Th 2–4.30. Greenhouses. Professor WHITE and ————.

The evolution of the greenhouse; present-day types; materials and methods of construction; principles and methods of heating.

121. **Commercial Floriculture.** First term. Credit four hours. Prerequisite, courses 11 and 12. Botany 1 and 31, Agronomy 1, and the farm-practice requirement. This course is planned for men students who intend primarily to grow flowers and potted plants for sale, and no student will be admitted to the course who has not had at least a half year of practical experience in a greenhouse range. Lectures and recitations, M W F 10. Countryman Building. Practice, F 2–4.30. Greenhouses. Professor WHITE and ————.

Studies in the culture of commercial florists' crops. Methods of packing, shipping, and marketing are considered. The class will participate in a required excursion to Utica and Rome on October 21. Laboratory fee, $2.

122. **Commercial Floriculture.** Second term. Credit four hours. Prerequisite, course 121. Lectures and recitations, M W F 10. Countryman Building. Practice, F 2–4.30. Greenhouses. Professor WHITE and ————.

A continuation of course 121, with methods of culture of commercial crops not previously considered. These courses, with their prerequisites, aim to fit students for commercial work. Students taking these courses are expected to work on commercial ranges during one semester and vacations. The class will participate in a required excursion to Elmira on March 23. Laboratory fee, $2.

123. **Wholesaling and Retailing Flowers.** First term. Credit three hours Prerequisite, courses 121 and 122 and permission to register. Lectures, T Th 10 Countryman Building. Practice, W 2–4.30. Greenhouses. Professor WHITE and ————.

This course is planned with the view of giving students a thorough knowledge of methods of retail-store management, store equipment, salesmanship, business methods, delivery, decorating for all functions, flower arrangement and the making of designs, methods of conducting cooperative flower exchanges, and wholesale markets. Other topics of a like nature are discussed. There will be a required trip to Rochester, to visit a wholesale establishment and retail stores, on November 19. Laboratory fee, $5.

125. **Conservatory Plants.** Second term. Credit two hours. Prerequisite, course 11 and Botany 1. Lectures and demonstrations, T Th 10. Greenhouses. Professor WHITE and ————.

Designed for students interested in work on private estates or in parks. A study of such tropical and subtropical foliage and flowering plants as are used for the ornamentation of glasshouses of decorative type. Laboratory fee, $1.

31. **Flower Arrangement.** Second term. Credit one hour. Registration limited to fifteen students in each section. Preference for registration in Section I will be given to students specializing in Floriculture and General Agriculture. Section II is for students in the College of Home Economics. Lectures, demonstrations, and practice: Section I, T 2–4.30; Section II, Th 2–4.30. Greenhouses. Professor WHITE.

A study of the principles and methods of arrangement of flowers for home decoration and table decoration, in baskets, vases, and formal designs; also the arrangement of flowers and plants for all types of interior decoration. Laboratory fee, $5.

43. **A Brief Introduction to Landscape Design.** Second term. Credit three hours a term. Lectures, T Th 10. Recitations, S 10. Caldwell 100. Professor DAVIS.

A discussion of the first principles involved in landscape planning, with special application to small city and suburban homes, farmsteads, and cottage grounds. The course is intended for students who desire an intelligent point of view in landscape work but who do not intend to take the more technical courses in theory.

51. **Lawn-making and Green-keeping.** First or second term. Credit two hours. Registration by permission of the department. F 10–1 and 2–5. East Roberts 7. Professor R. W. CURTIS.

This course deals with the principles, practices, and materials which have to do with the construction and maintenance of lawns and greens. It includes weekly laboratories, and reports, and occasional discussions by men prominent as turf experts and green-keepers.

161. **The History and Literature of Ornamental Horticulture.** First term. Credit two hours. Designed primarily for seniors, and required of graduate students. Lectures, T Th 11. Roberts 234. Professor BEAL.

A comprehensive study of the evolution of gardening, the introduction of plant material, and the development of floricultural ideals. Beginning with the earliest records, these are traced through the centuries to the present time. The unusually large library collection of herbals and European works of late date offers exceptional facilities for presenting this course.

162. **Investigation in Floriculture and Ornamental Horticulture.** Throughout the year. Credit one or two hours a term. Designed primarily for upperclassmen and graduate students. Prerequisite, permission to register. Consultation by appointment. Professors WHITE, BEAL, R. W. CURTIS, and HUNN.

The investigations of problems in materials for ornamental planting and in the commercial culture of cut flowers and potted plants, exotics, garden flowers, and the like.

201. **Seminary.** First and second terms. Credit one hour a term. Required of advanced students who elect course 162, and of all graduate students in the department. F 9. Countryman Building.

FORESTRY

The instruction in forestry is designed to meet the needs of several classes of students: (1) professional forestry students preparing for forestry as a life work (course outlined below); (2) students of general agriculture who wish elementary instruction in the care of woodlands and in forest planting and forest nursery work; (3) prospective teachers, business and professional men, and others who desire an understanding of the place of forestry in the life of a nation; (4) technical students in other lines who wish one or more technical forestry courses, such as wood technology. The entrance requirements are the same as for general agriculture.

During the four years the professional forestry student is registered in the College of Agriculture his work must include: (a) all the courses required of general agricultural students; (b) plane trigonometry, unless accepted for entrance; (c) such other courses as the Department of Forestry believes to be best adapted to meet the needs of the individual student; (d) at least four months experience in forestry work or in a forest industry, one month of which, in the summer following the junior year, must be spent in the forestry camp conducted by the Department of Forestry in a forest in New York State; (e) Civil Engineering summer camp, of four weeks. Requirement (d) is demanded of all professional forestry students both as a part of their training and also in lieu of the farm-practice requirement. A two-weeks trip to the south in connection with course 143 is required of seniors during the spring recess, and three days immediately before and after. Two weeks credit will be allowed on the practice requirement. On the following pages is a required sequence of studies for students specializing in forestry. Deviations from this sequence may be made only with the approval of the student's faculty adviser. In all cases the course of study for a professional forestry student must be planned by the Department of Forestry; and it has been ruled that each professional forestry student must choose as his faculty adviser one of the professors or assistant professors in the Department of Forestry. Professional forestry students must register with the department in order that their standing as such may be recognized.

Further details regarding the professional forestry course may be obtained through correspondence with the Department of Forestry. Freshmen who are planning to take the professional forestry course should enter the College at the beginning of the first term of the college year. Those entering in the second term will have difficulty in arranging satisfactory schedules of courses and may require one extra term to complete all the requirements.

Required Sequence of Studies for Professional Students in Forestry

Professional students in forestry must complete satisfactorily all of the courses listed in the following curriculum.

Freshman year

First term	*Hours*	*Second term*	*Hours*
Freshman Orientation Course	1	English 1	3
English 1	3	Botany 1	3
Chemistry 101	3	Geology 100	3
Chemistry 105	3	Drawing 1	3
Botany 1	3	Forestry 3	2
Mathematics 3*	3	Forestry 5	2

Summer following freshman year

Period of required field experience, thirteen weeks.

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*Mathematics 3 (plane trigonometry) must be taken during the freshman year if this subject was not offered for entrance.

Sophomore year†

First term	*Hours*	*Second term*	*Hours*
Civil Engineering 110 (Elementary Surveying)	3	Physics 4‡	3
Botany 13	3	Botany 31	4
Entomology 12	3	Civil Engineering 211A (Advanced Surveying)	3
Economics 1	5	Entomology 43	2
Physics 3‡	3	Forestry 151	3
Elective			

Summer following sophomore year

C. E. summer camp, four weeks. Civil Engineering 213 (Surveying). Credit four hours.

Junior year

First term	*Hours*	*Second term*	*Hours*
Botany 22	1	Forestry 140	2
Forestry 121	3	Forestry 141	2
Plant Pathology 1	3	Forestry 152	2
Agronomy 1§	5	Forestry 123	3
Civil Engineering 214a	2	Forestry 124	3
Elective		Plant Pathology 111	2
		Elective	

Summer following junior year

Department of Forestry summer camp, four weeks, August and September. Professional forestry students must attend this camp to satisfy in part the requirement for forest practice demanded of forestry students, in lieu of farm practice.

Senior year

Schedules of seniors must be arranged so that Tuesday of each week, first term, will be left free for field work, 8–4.30, in connection with courses 124, 142, and 153.

First term	*Hours*	*Second term*	*Hours*
Forestry 142	3	Forestry 143	2
Forestry 144	2	Forestry 154	2
Forestry 122	1	Forestry 125	2
Forestry 124	4	Forestry 131	3
Forestry 111	3	Forestry 112	2
Forestry 153	3	Electives	
Electives			

Graduate year

Adequate preparation for the profession of forestry requires at least a year of graduate work in addition to the four-years undergraduate course. The undergraduate work in forestry leads to the degree of bachelor of science; the graduate work leads to the degree of master in forestry. (See the Announcement of the Graduate School.)

General Forestry

1. **The Farm Woodlot.** First term. Credit two hours. Lecture, M 9. Practice, M 2–4.30. Fernow 8. Assistant Professor Guise.

A course covering those phases of forestry that are applicable to the farm woodlot. Identification of the principal trees of this region; measurement of logs, trees, and stands; nursery work, forest plantings, thinnings, and improvement cuttings; the preservative treatment of farm timbers. Laboratory fee, $1.

Students expecting to take courses 53 and 24 should not elect course 1, since the ground covered in course 1 is repeated in courses 53 and 24.

†Students planning to elect Chemistry 776 (Chemistry of Pulp and Paper Making) should elect the prerequisite thereto, Chemistry 775 (Engineering Chemistry), during the first term of the sophomore year.

‡Required of students who do not present physics for entrance. Other students should elect Agronomy 1 in the second term of the sophomore year.

§Students who have not had Agronomy 1 in the sophomore year should elect it this term.

3. **Conservation of Natural Resources.** Second term. Credit two hours. For others than professional forestry students. Prerequisite, Economics 1. Lectures, T Th 10. Fernow 122. Professor BRISTOW ADAMS.

The conservation of natural resources in the United States; the interrelation of the uses and wastes of the forest with those of various resources. The influence of the physical equipment of America on human life and on American civilization, with special reference to the natural resources, including the human element, as the basis of national strength and power.

4. **The Field of Forestry.** First term. Credit two hours. Lectures, M W 10. Fernow 122. Professor HOSMER.

The place of forestry in the life of a nation; its nature, aims, and importance; the five main branches of forestry; national, state, communal, and private forestry.

5. **Introduction to Forestry.** Second term. Credit two hours. Required of and open only to first-year professional forestry students. Others should take course 4. Lectures, M W 10. Fernow 122. Professor SPRING and other members of the forestry staff.

An introductory course intended to acquaint the student with the forestry profession, and to give him a broad view of it as a basis for subsequent technical instruction.

FOREST POLICY

111. **The Development of Forestry.** First term. Credit three hours. Open only to professional forestry students. Lectures, M W F 11. Fernow 118. Professor HOSMER.

The historical development of forestry in the leading countries of the world, with particular reference to its present status; the history of forestry in the United States under federal, state, and other auspices.

112. **Forest Policy: Federal and State.** Second term. Credit two hours. Open only to professional forestry students. Prerequisite, course 111. Lectures, M W 11. Fernow 118. Professor HOSMER.

The economic basis of forestry; the public land policy in its relation to forestry in the United States; the forest policies of the Nation and of the several States, with especial reference to the principles that underlie them; forest policy as expressed in law; forest taxation.

SILVICULTURE

24. **Elements of Forestry: Silviculture.** First term. Credit three hours. Lectures, M W 11. Fernow 122. Practice, W 2–4.30. Fernow 118. Professor SPRING.

An elementary course covering the life history of the forest; forest planting, seeding, and nursery work; natural reproduction of the forest; care of the crop during its growth, including thinnings; protection from fire and other enemies; identification of the principal timber trees of this region. (See course 53.) Laboratory fee, $1.

Courses 53 and 24 may be taken independently. If both courses are taken, they should meet the needs of students who wish a more detailed knowledge of woodland management than is given in course 1, but do not wish the professional courses.

121. **Timber Trees and Forest Regions.** First term. Credit three hours. Prerequisite, Botany 13. Lectures, M F 8. Practice, W 2–4.30. Fernow 122. Assistant Professor GUISE.

A brief account of the forest regions of the world; detailed description of the forest regions of the United States and Canada; the distribution, importance, and silvical characteristics of a large number of the leading timber trees of the United States and Canada, and the identification of such of these as do not grow near Ithaca. (The identification of trees growing near Ithaca is included in Botany 13.) Laboratory fee, $2.

[122. **Forests of Foreign Countries.** First term. Credit one hour. Prerequisite, course 121 or its equivalent. Professor BENTLEY.] Not given in 1927–28.

Lectures and assigned readings on the forest trees and resources of foreign countries.

123. **Forest Planting.** Second term. Credit three hours. Lectures, until spring recess, M W 8; thereafter, W 8. Fernow 122. Practice, until spring recess, S 8–10.30; thereafter, S 8–1. Fernow 118. Professor SPRING.

Collection, care, and testing of tree seeds; identification of tree seeds and seedlings; raising trees in a forest nursery; starting forests by planting trees and by direct seeding; fixation of sand dunes; forestation on the prairies and under semi-arid conditions. Laboratory fee, $2.

124. **Silviculture A.** First and second terms. First term, credit four hours. For seniors only. Prerequisite, course 121 and Botany 13 and 31 or their equivalents. Lectures, M W F 8. Fernow 118. Field work, four Tuesdays, dates to be announced. Prior to December 1, 8–4.30; thereafter, 2–4.30. Fernow 118. Professor SPRING. Second term, credit three hours. For juniors only. Lectures, until spring recess, M W F 11; thereafter, M F 11. Fernow 122. Field work, after spring recess, W 2–4.30. Fernow 118. Professor SPRING.

A study of the fundamentals of silviculture; the standard methods of reproducing forests naturally; the methods of tending forests. Laboratory fee, $1.

125. **Silviculture B.** Second term. Credit two hours. Prerequisite, courses 121 and 124. Lectures, T Th 11. Fernow 122. Professor SPRING.

FOREST PROTECTION

131. **Forest Protection.** Second term. Credit three hours. Open only to professional forestry students. Lectures, M W F 9. Fernow 122. Professor HOSMER.

The protection of forests from fire and other enemies. Emphasis is placed on the principles underlying forest-fire prevention, detection, and control, especially as these are put in practice through the forest-fire plan. (Protection from injury by insects and fungi is covered in Entomology 43 and Plant Pathology 1 and 111, respectively.)

FOREST UTILIZATION

140. **Seasoning and Preservation of Timber.** Second term. Credit two hours. Prerequisite, Botany 22. Lectures, T Th 9. Fernow 8. Assistant Professor GUISE.

Kiln drying and air seasoning of wood. Physical principles of drying, construction and operation of various types of commercial kilns. Wood preservation; preservatives, methods of treating timber with chemical preservatives, and results secured.

141. **Wood Technology.** Second term. Credit two hours. Prerequisite, Botany 22. Lectures, until spring recess, T 11; thereafter, T Th 11. Practice, until spring recess, W, 2–4.30. Fernow 8. Professor RECKNAGEL.

Macroscopic structure of wood; physical, chemical, and mechanical properties of wood; technical uses of wood (paper pulp, destructive distillates, and the like); identification, qualities, and uses of the wood of important trees. Laboratory fee, $2.

142. **Forest Utilization.** First term. Credit three hours. Lectures, M W F 10. Fernow 118. Professor RECKNAGEL.

Logging methods and equipment; logging in representative regions; manufacture of lumber; determination of stumpage values; timber sale contracts; timber sale administration, including marking, brush disposal, and scaling in practice; minor industries; the organization of the lumber industry; markets.

Field studies in forest utilization are made during the required month of camp, immediately preceding the fall term of the senior year, and on two Tuesdays prior to December 1, 8–4.30.

143. **Forest Industries.** Second term. Credit two hours. Prerequisite, course 142. Lectures, T Th 10. Fernow 118. Professor RECKNAGEL.

The organization and development of the forest industries, particularly the

lumber industry and the pulp and paper industry, and their relation to forest management.

[144. **Forest Engineering.** First term. Credit two hours. Prerequisite, plane trigonometry and courses in surveying. Professor BENTLEY.] Not given in 1927–28.

The construction of trails, roads, telephone lines, and the like, especially as applied in work on the national forests.

Opportunity for practice is afforded during the required month in camp.

FOREST MANAGEMENT

[53. **Elements of Forestry: Mensuration and Management.** Second term. Credit three hours. Professor BENTLEY.] Not given in 1927–28.

An elementary course including: estimating and measuring the amount of standing timber and its value; measurement of logs and other forest products; rate of growth of timber in diameter, height, and volume; value increment; age at which timber should be harvested; methods of regulating the amount of timber cut so as to insure a permanent income. (See course 24.) Laboratory fee, $2.

151. **Forest Mensuration.** Second term. Credit three hours. Lectures, T Th 11. Practice, F 2–4.30. Fernow 118. Assistant Professor GUISE.

Measurement of logs and standing timber; timber cruising; volume tables. Laboratory fee, $3.

Opportunities for additional training in methods of forest mensuration are given during the month of required work in camp.

[152. **Advanced Forest Mensuration.** Second term. Credit two hours. Professor BENTLEY.] Not given in 1927–28.

The growth and yield of stands, with the application of the statistical methods thereto.

153. **Forest Management.** First term. Credit three hours. Prerequisite, courses 124, 151, and 152. Lectures, W F 9. Fernow 122. Field work, three Tuesdays prior to December 1, dates to be announced, 8–4.30; thereafter, 10–12.30. Fernow 8. Assistant Professor GUISE.

The organizing of a forest property for management, with special attention to sustained yield and forest management plans; forest finance, including costs of growing timber, stumpage value determination, and damage appraisal.

154. **Forest Administration.** Second term. Credit two hours. T Th 9. Fernow 122. Professor RECKNAGEL.

The administrative organization and business practice in federal, state, and private forestry.

253. **Advanced Forest Management.** First term. Credit three hours. Open only to graduate students. Prerequisite, course 153. Lectures, T Th 10. Practice, S 10–12.30. Fernow 118. Professor RECKNAGEL.

The organizing of a forest property for management. An important part of this course is the critical study of working plans.

254. **Forest Finance.** Second term. Credit three hours. For graduate students. Prerequisite, course 153. M W F 9. Fernow 8. Assistant Professor GUISE.

Economics of forest finance, including the problem of compound interest; cost of growing and holding timber; valuation of forests devoted to sustained yield; stumpage appraisal; appraisal of damages to forest property; financial aspects of insurance of standing timber; and taxation of forests.

ADVANCED FORESTRY

261. **Seminary.** Second term. Without credit. For graduate students in forestry. Hours to be arranged. Fernow 118. Professors HOSMER, SPRING, and RECKNAGEL, and Assistant Professors GUISE and SPAETH.

Field and classroom conferences on important phases of forestry.

262. **Advanced Work.** Throughout the year. Credit two or more hours a term. Open to graduate and undergraduate students who have had the necessary

training. Hours by appointment. Professors HOSMER, SPRING, and RECKNAGEL, and Assistant Professors GUISE and SPAETH.

Individual advanced study of designated topics.

METEOROLOGY

1. **Elementary Meteorology.** First or second term. Credit three hours. Lectures, T Th 10. East Roberts 222. Laboratory, to be assigned at the time of registration, W Th or F 2–4.30. East Roberts 341. Professor MORDOFF.

This is a course designed to acquaint the student with the principles of the general and secondary circulation of the atmosphere; the elements of weather and climate; practical weather forecasting from weather maps and local observations. The laboratory periods include demonstrations, recitations, practice, and comparative studies of general and local weather. Laboratory fee, $2.

2. **General Climatology.** Second term. Credit two hours. Prerequisite, course 1. Lectures and recitations, M W 8. East Roberts 341. One conference period a week, by appointment. Professor MORDOFF.

This course is designed to give a general knowledge of climatology and of the various climates of the United States, with emphasis on those of New York State. During the conference hours there are general discussions of all subjects that are taken up in the course.

211. **Research.** First or second terms. Credit one or more hours a term. Prerequisite, permission to register. Hours by appointment. Professor MORDOFF.

A course designed for advanced and graduate students. Original investigations in meteorology and climatology.

212. **Seminary.** First term. Credit two hours. Prerequisite, course 2 and permission to register. M 4–6. East Roberts 341. Professor MORDOFF.

Preparation and reading of reports on special topics. Abstracts and discussions of papers dealing with the current literature of meteorology and climatology. A specific problem is required of each student.

PLANT BREEDING

101. **Genetics.** First term. Credit four hours. Prerequisite, Botany 1 and Plant Physiology, or Zoology 1 and either animal or human physiology. Courses in cytology and in taxonomic botany and zoology will be found helpful in connection with this course. Assignment to sections must be made at the time of registration. Lectures, M W F 8. Fernow 210. One conference period, to be arranged. Laboratory, M W or F 2–4.30. Fernow 212. Assistant Professor FRASER and Dr. DORSEY.

A general introductory course designed to acquaint the student with the fundamental principles of heredity and variation. Special attention is given to the Mendelian interpretations of the facts of inheritance. Among the topics to be discussed are: the physical basis of heredity, simple cases of Mendelian inheritance, factor interaction, the determination of sex, factor linkage, the measurement of variation, quantitative inheritance, pure lines, inbreeding and crossbreeding, maternal inheritance, and mutation, with suggestions as to the relation of genetical principles to eugenics. Laboratory studies of variation, and of the laws of heredity as illustrated by hybrid material in plants and by breeding experiments with the fruit fly, Drosophila. Laboratory fee, $3.

201. **Genetics, Advanced Course.** Second term. Credit three hours. Primarily for graduate students. Prerequisite, course 101 or its equivalent, Botany 124, and permission to register. Discussion periods, T F 2–4, and a laboratory problem in genetic analysis to be worked at the convenience of the student. Fernow 212. Assistant Professors FRASER and LEWIS.

A course primarily for the study of methods of genetical testing and analysis. Particular attention is given to the formulation of hypotheses to explain genetical phenomena, and to the development of tests of such hypotheses. A critical study is made of a number of the best examples of genetical analysis to be found in the periodical literature. The discussions involve a consideration of newer

principles of genetics. Laboratory analyses of experimental data, and of an "unknown" stock of Drosophila. Laboratory fee, $3.

103. **The Application of Genetic Principles to Crop Improvement.** Second term. Credit two hours. Prerequisite, course 101. Lectures, T Th 8. Fernow 210. Professor MYERS.

Special reference is made to the causes of heritable variations in plants and to the rôle of selection and hybridization in crop improvement. Methods of breeding applicable to the various types of crops, methods of seed production and distribution, and the results of plant breeding investigations are discussed.

Trips to the departmental greenhouses, gardens, fields, and seed house are made to acquaint the student with the methods and technique of plant-breeding work.

211. **Biometry.** First term. For graduate students only. Time to be arranged. Professor LOVE.

A discussion of statistical methods as applied to problems in biology and genetics. The course is designed primarily to develop methods for the study of variation, correlation, curve fitting, and probable error.

221. **Research.** Throughout the year. Hours by appointment. Fernow. Professors EMERSON, LOVE, MYERS, and BUSSELL, and Assistant Professors FRASER, WIGGANS, and LEWIS.

Investigations of problems in plant breeding, heredity, and variation.

222. **Seminary.** First and second terms. For graduate students only. W 11. Fernow. Professors EMERSON, LOVE, MYERS, and BUSSELL, and Assistant Professors FRASER, WIGGANS, and LEWIS.

A seminary for the discussion of special topics in genetics, plant breeding, and statistical methods, and for the presentation of reports on the research problems of graduate students and members of the staff.

PLANT PATHOLOGY

1. **General Plant Pathology.** First or second term. Credit three hours. Prerequisite, Botany 1 or its equivalent. Assignment to laboratory sections must be made at time of registration. Lecture, W 8. East Roberts 222. Practice, first term, W F 2–4.30, or Th 2–4.30 and S 10.30–1; second term, W F 2–4.30. Bailey, West Basement. Professor WHETZEL, Assistant Professor WELCH, and Messrs. SINDEN and STEWART.

A fundamental course treating of the nature, cause, and control of plant diseases, illustrated by studies of the commoner diseases of cultivated crops. The practice sections are limited to twenty-four students each. Admission, if registration is in excess of twenty-four per section, on the basis of average scholastic standing to date. Laboratory fee, $4.50; breakage deposit, $3.

201. **Advanced Plant Pathology.** First and second terms. Credit three hours. Prerequisite, courses 1 and 2. Students should consult the professor in charge before registering. Lecture, F 8. Practice, T F 10–12.30. Bailey, Basement. Professor MASSEY.

A presentation and analysis of the experimental and empirical knowledge of plant diseases. The phenomena of infection, susceptibility, host reactions, and symptomatology will be critically considered. Laboratory fee, $4.50; breakage deposit, $3.

2. **Principles of Plant-Disease Control.** Second term. Credit three hours. Prerequisite, course 1. Lecture, Th 8. Roberts 292. Conferences (one a week) by arrangement during practice periods. Practice, Th 2–4.30, S 8–10.30. Bailey, West Basement. Professor WHETZEL.

A consideration of the principles and methods of controlling plant diseases. This includes studies on: exclusion by laws, regulations, quarantine, inspection, and disinfection; eradication by pruning, seed selection, tree surgery, rotation, disinfection, and other means; protection by spraying, dusting, wound dressing, and the like; immunization by selection, breeding, and feeding. Number taking the course limited to twenty-four. Admission, if registration is in excess of this number, on the basis of average scholastic standing to date. Breakage deposit, $3.

111. **Forest Pathology.** Second term. Credit two hours. Prerequisite, course 1. Lecture, M 10. Practice, T 2–4.30. Bailey, West Basement. Assistant Professor WELCH.

A course designed for students in forestry, dealing primarily with fundamental principles of forest pathology and tree-disease control. Laboratory fee, $2.50; breakage deposit, $3.

121. **Comparative Morphology of Fungi.** First term. Credit four hours. Prerequisite, Botany 1 or its equivalent, and permission to register. Lectures, M W 9. Bailey, West Basement. Practice, M W 2–4.30. Bailey, East Basement. Professor FITZPATRICK and Mr. MILLER.

A synoptical course designed to acquaint the student with the general field of mycology. Emphasis is placed on morphology and phylogeny, rather than on taxonomy. Laboratory fee, $6; breakage deposit, $3.

[221. **Mycology.** First and second terms. Credit four hours. Prerequisite, Botany 1 or its equivalent, and permission to register. Professor FITZPATRICK and Mr. ————.] Not given in 1927–28.

An advanced course designed especially for students who wish to specialize in plant pathology or mycology. An intensive study of the morphology, taxonomy, and phylogeny of the fungi. (Phycomycetes and Ascomycetes.)

222. **Mycology.** First and second terms. Credit four hours. Prerequisite, Botany 1 or its equivalent, and permission to register. Lectures, M W 11. Bailey, West Basement. Practice, T Th 2–4.30. Bailey, East Basement. Professor FITZPATRICK and Mr. MILLER.

An advanced course, alternating with course 221, dealing with the Basidiomycetes, Fungi Imperfecti, Myxomycetes, and identification of miscellaneous fungi. Laboratory fee, $6; breakage deposit, $3.

[231. **History of Plant Pathology.** First and second terms. Credit one hour. Prerequisite, course 1 and reading knowledge of French and German. Professor WHETZEL.] Not given in 1927–28.

232. **German Phytopathological Reading.** First and second terms. For graduates and advanced students. Without credit for undergraduate students. Two one-hour periods a week, to be arranged with the professor in charge. Professor WHETZEL.

241. **Research.** Throughout the year. Not less than three laboratory periods of three clock hours a week. Professors and assistant professors on the departmental staff.

Laboratory fee, $1.50 a credit hour; breakage deposit, $3.

242. **Seminary.** First and second terms. Required of graduate students taking work in the department. Biweekly, Tuesday, 7.30–10 p. m.

POMOLOGY

1. **General Pomology.** Second term. Credit three hours. Prerequisite, Botany 1, Chemistry 101, and, for those who have not met the farm-practice requirements, permission to register. Lectures, T Th 8. East Roberts 222. Laboratory, to be assigned at the time of registration, M T Th or F 2–4.30. East Roberts 108. Professor CARRICK and Messrs. WENTWORTH and FURR.

A study of the general principles and practices in pomology; propagation and care of orchard trees and small fruits; harvesting, storing, and marketing fruit. Practical work in budding, grafting, pruning, and planting; study of varieties, growth, and fruiting habits. Laboratory fee, $2.

2. **Fruit Varieties: Identification, Judging, Exhibits.** First term. Credit two hours. Prerequisite, course 1. Lecture, M 12. East Roberts 222. Laboratory, to be assigned at time of registration, F 2–4.30, S 8–10.30 or 9–11.30. East Roberts 108. Professor MACDANIELS and Mr. WENTWORTH.

A study of the most important varieties of apples, pears, peaches, plums, and grapes, chiefly from the standpoint of their identification. Some emphasis is also given to tree characters, regional adaptation, season of ripening, storage quality, and other matters of a similar nature. A part of the time is given to the judging of exhibition fruit, and the Farmers' Week fruit exhibit will be set up by the students of this course. Laboratory fee, $2.

111. **Packing and Storage of Fruit for Market.** First term. Credit two hours. Prerequisite, courses 1 and 2, and permission to register; should be preceded or accompanied by Entomology 12, Plant Pathology 1, and Agricultural Economics and Farm Management 142. S 8–1. East Roberts 222 and the packing house. Professor OSKAMP.

Particular emphasis is placed on packing apples in barrels, boxes, and other retail packages, but the work covers also such fruits as peaches, plums, pears, and grapes, in so far as these are available. The effect of grades and packages on distribution and marketing is fully discussed, and consideration is given to some of the problems of operating a central fruit-packing house. The principles and practices of common and cold storage are also considered. Laboratory fee, $2.

112. **Advanced Laboratory Course.** First or second term, or both. Credit one or more hours a term. Intended for students doing their major work in pomology. Prerequisite, permission to register. S 8–1. Professors HEINICKE, CARRICK, and MACDANIELS.

During the first term opportunity is given to gain greater familiarity with varieties and experience in judging than can be given in course 2; during the second term this course is designed to give more extended practice in the various nursery and orchard operations than can be given in course 1. Special attention is given to problems of pruning, tree surgery, bracing, and pest control. Laboratory fee, $2 a term.

113. **Orchard Field Trip.** Credit one hour. Given in alternate years. Prerequisite, courses 1 and 2, and permission to register. To be taken during the week preceding the week of registration for the first term. Students who wish to take this trip must signify their intention by July 20 preceding. The expense of this trip—about $30—must be met by the individual student. Students may register for this course in the first term. Professor HEINICKE, or Professor CARRICK, or Professor MACDANIELS.

The course is designed to give the students who specialize in pomology an intimate knowledge of practical orchard conditions.

121. **Economic Fruits of the World.** First term. Credit three hours. Prerequisite, course 1 and permission to register. Professor MACDANIELS and Mr. WENTWORTH.

A study of all species of fruit-bearing plants of economic importance, such as the date, the banana, citrus fruits, nut-bearing trees, and newly introduced fruits, with special reference to their cultural requirements in the United States and its insular possessions. All fruits not considered in other courses are considered here. The course is designed to give a broad view of world pomology and its relationships with the fruit industry of New York State. Emphasis is placed on botanical relationships and fruit structure. Laboratory fee, $2.50.

131. **Advanced Pomology.** First term. Credit four hours. Prerequisite, courses 1 and 2, Botany 31, and permission to register. Discussions, M W F 9. East Roberts 108. One conference period, to be arranged. Professor HEINICKE.

A comprehensive study of the sources of knowledge and opinion as to practices in pomology; methods and difficulties in experimental work in pomology, and results of experiments that have been concluded or are being conducted. Chandler's Fruit Growing will be used as a text.

201. **Research.** Throughout the year. Credit one or more hours a term. Prerequisite, course 131 and permission to register. Professors HEINICKE, CARRICK, OSKAMP, MACDANIELS, and PECK.

200. **Seminary.** Throughout the year, without credit. Required of students taking course 201 and of graduate students in pomology. M 11. East Roberts 108. Members of the departmental staff.

202. **Special Topics in Pomology.** First, second, or both terms. Credit two or more hours a term. Open to graduate students with adequate preparation. Two discussion periods a week to be arranged. Professor HEINICKE, Professor CARRICK, or Professor MACDANIELS.

Different topics will be considered each term, the aim being to cover the entire field in two years. In this course the student is expected to review critically and evaluate the more important original papers relating to pomological practice and

research. Interpretation of the literature is made on the basis of the fundamental principles of plant biology and recent experimental methods.

POULTRY HUSBANDRY

1. **Farm Poultry.** First or second term. Credit three hours. Lectures, W F 9. Poultry Building 375. Practice: first term, F 2–4.30 or S 8–10.30; second term, Th F 2–4.30 or S 8–10.30. Poultry Building 300. Professors RICE, HEUSER, and BOTSFORD, Assistant Professors WEAVER, NORRIS, and HALL, and Messrs. HUTTAR, MARBLE, and ROMANOFF.

A brief general course dealing with the practical application of the principles of poultry husbandry to general farm conditions. One or two out-of-town trips taking an entire afternoon will be included.

2. **Poultry Nutrition.** Second term. Credit three hours. Prerequisite, course 1. Lectures, T Th 9. Practice, Th 2–4.30. Poultry Building 325. Professor HEUSER, Assistant Professor NORRIS, and Mr. WILGUS.

The principles of poultry nutrition, including methods of feeding for egg production, rearing, and fattening; the study of feeds suitable for poultry; the compounding of rations; and practice in poultry-feeding management.

102. **Advanced Poultry Nutrition.** First and second terms. Credit one hour a term. For seniors and graduate students. Prerequisite, course 2. Registration by appointment only. Discussion, F 10. Poultry Building 325. Professor HEUSER and Assistant Professor NORRIS.

A study of experimental methods involved in conducting research projects in poultry nutrition, together with a critical review of current literature about poultry nutrition and allied subjects.

3. **Poultry Incubation and Brooding.** Second term. Credit three hours. Prerequisite, course 1. Lecture, M 11. Practice, M 2–4.30; also reporting three times daily, including Sunday, for eight weeks, 7.45–8.30, 12.45–1.15, 4.30–5. Poultry Building 325. Assistant Professor WEAVER and Mr. ROMANOFF.

Principles and practice of incubation and brooding. Daily practice for four weeks in operating incubators and for four weeks in the management of a brooder and a flock of chickens.

11. **The Breeds of Poultry and Judging.** First term. Credit two hours. Prerequisite, course 1. Lecture or recitation, F, 11. Poultry Building 325. Practice, Th or F 2–4.30. Breed Observation House. Assistant Professor HALL.

The origin, history, and classification of breeds of domestic poultry; judging the principal breeds for fancy and production points by score-card and comparison methods; fitting fowls for exhibition. A required trip will be made to one of the leading poultry shows the second or third week of January. Trips to near-by farms will also be made.

12. **Poultry Breeding.** Second term. Credit two hours. Prerequisite, course 11. Lecture or recitation, F 11. Poultry Building 375. Practice, F 2–4.30. Poultry Building 325. Assistant Professor HALL.

The principles and practice of poultry breeding. Trips to near-by farms will be made.

21. **Poultry-House Design and Construction.** Second term. Credit three hours. Prerequisite, course 1. Lecture or recitation, T Th 11. Practice, T 2–4.30. Poultry Building 325. Professor BOTSFORD and Mr. HUTTAR.

A study of principles of poultry-house construction; planning, arranging, and designing poultry houses; estimating the cost of buildings; studying building plans; practice in erecting and remodeling houses and in making appliances. An excursion to neighboring farms will be made.

31. **Marketing Poultry Products.** First term. Credit three hours. Prerequisite, course 1. Lecture or recitation, M W 11. Poultry Building 325. Practice, M or T 2–4.30. Poultry Building 100. Mr. HUTTAR.

This course deals with the preparation of poultry and eggs for market, and with storage and preservation. A class trip to New York, following the Christmas holidays, is required of all students. This trip gives the students an opportunity to become familiar with the live- and the dressed-poultry and the egg markets, and with wholesale dealers. The total necessary expense is about $35.

135. **Poultry-Farm Management.** Second term. Credit three hours. Prerequisite, nine hours credit in poultry courses, and accompanying registration in six hours more of poultry courses. Lectures, M W 10. Poultry Building 325. Practice, W 2–4.30. Poultry Building 325. Professors RICE and BOTSFORD and Mr. MARBLE.

The principles of farm management as applied to the poultry farm; selection of the farm; use of poultry-farm score cards; farm layout and arrangement of buildings; study of farm records. As a final problem, each student will work out plans for the management of a poultry enterprise that seems most adaptable to his personal needs. The course includes several required excursions, one of which will be a two-day trip, to representative poultry plants in April and May, at an approximate cost of $15.

137. **The Field of Poultry Husbandry.** First term. Credit two hours. Prerequisite, course 1. Lectures, T Th 11. Poultry Building 325. Professor RICE and Mr. ————.

A study of the general field of poultry husbandry, for students specializing in the department. The course includes a study of the bibliography of poultry husbandry and of the history, the scope, and the opportunities of the poultry industry.

141. **Research.** First or second term, or throughout the year. Credit one or more hours a term. Prerequisite, permission to register. Time arranged by appointment. Poultry Building. Members of the departmental staff.

An original investigation of a problem in poultry husbandry to be presented as a written thesis. Frequent conferences are required of all students electing this course.

242. **Seminary.** Throughout the year. Required of all graduate students in poultry husbandry and for seniors taking course 141. S 11. Poultry Building 325. Members of the departmental staff.

A discussion of advanced work in poultry husbandry.

RURAL EDUCATION

Courses are grouped by decades, as Introductory, 1–10; Psychology, 11–20; Educational Method, 21–40; Preparation of Teachers for Normal Schools and Colleges, 41–50; Educational Measurement, 51–60; Educational Administration and Supervision, 61–80; Secondary Education, 81–90; Philosophy of Education, 91–100.

INTRODUCTORY COURSES

[1. **Introduction to Problems of Public Education.** Second term. Credit three hours. Open to freshmen and sophomores only.] Not given in 1927–28.

The purpose of this course is to introduce students to some of the more important problems of public education.

[101. **Introduction to Problems of Public Education.** First term. Credit two hours. Open only to sophomores and juniors who have not taken course 1]. Not given in 1927–28.

PSYCHOLOGY

111. **Psychology for Students of Education.** First or second term. Credit four hours. Open to juniors and seniors.

First term:

Section 1, lectures, M W F 11, Caldwell 143; laboratory, T 2–4.30, Caldwell 282.
Section 2, lectures, M W F 11, Countryman Building; laboratory, W 2–4.30, Caldwell 282.
Section 3, lectures, M W F 9, Caldwell 143; laboratory, Th 2–4.30, Caldwell 282.

Second term:

Section 1, lectures, M W F 11, Caldwell 143; laboratory, T 2–4.30, Caldwell 282.
Section 2, lectures, M W F 8, Caldwell 100; laboratory, Th 2–4.30, Caldwell 282.

211a. **Psychology for Students of Education.** First term. Credit four hours. For mature students with teaching experience. Lectures, M W F 11–12.30. East Roberts 232. Professor KRUSE.

[211b. **Psychology for Students of Education.** Second term. For members of the teaching staff. Professor KRUSE.] Not given in 1927–28.

114. **Psychology for Students of Hotel Administration.** Second term. Credit four hours. Open to juniors and seniors. Lectures, M W F 10. Caldwell 143. Laboratory, M 2–4.30. Caldwell 282. Assistant Professor ————.

116. **Psychology for Students of Child Training.** Second term. Credit two hours. Open only to students who have had course 111. Lectures, T Th 11. Caldwell 100. Professor KRUSE.

[117. **Psychology for Students of Economics and Sociology.** First term. Credit four hours. An elementary course in psychology open to juniors, seniors, and graduate students. Graduate students planning to teach should take course 211a.] Not given in 1927–28.

218. **Seminary in Educational Psychology.** Second term. Credit two hours. Th 4–6. Caldwell 143. Professor KRUSE.

EDUCATIONAL METHOD

121. **Method and Procedure in Teaching in Secondary Schools.** First term. Credit three hours. Open to juniors and seniors who have completed course 111. Students preparing to teach home economics should take course 191. Lectures, M W F 11. Poultry Building 174. Professor FERRISS.

The development of certain principles of teaching in secondary schools, and their application to practical questions arising from the problems of selecting and organizing teaching materials, planning class work, making the assignment, determining classroom and laboratory methods, directing study, managing the class, measuring the results of teaching, and so forth, considered in the light of the principles developed.

222. **Principles of Method.** Second term. Credit three hours. Prerequisite, course 211a or its equivalent, and teaching experience. Lectures, M W F 9. Caldwell 282. Professor STEWART.

Designed to develop through concrete situations the principles underlying successful teaching experience. Each student evaluates the principles discussed in the light of some definite instruction unit.

223. **The Teaching of Elementary School Subjects.** First term. Credit three hours. M W F 8. Caldwell 282. Professor MOORE.

A course designed for experienced elementary-school teachers, supervisors, and others who are concerned with recent developments in this field. A critical consideration of important research studies which have a direct bearing upon the teaching of the elementary school subjects.

125. **The Teaching of Science in the Rural Secondary Schools.** Second term. Credit two or three hours. Prerequisite, courses 111 and 121 or their equivalents. Lectures, T Th 10. Fernow 16. Professor PALMER.

This course is designed to help high-school science teachers in the organization of their material, to aid them in introducing scientific ideas to high-school students, and to point out, particularly to teachers of biology, useful sources of information and supply. Opportunity is provided for observation of high-school science teaching for the third hour of credit.

226. **Research in Science Teaching.** First or second term. Credit two hours. Open to graduate students who have done work in education. Professor PALMER.

Special problems in science teaching.

227. **Seminary in Elementary Education.** Second term. Credit two hours. T 4–6. Caldwell 143. Professor MOORE.

Open to graduate students who are especially interested in elementary-school problems. The topics considered will vary from year to year, depending upon the interests of those participating.

131. **Teaching Agriculture in the High School.** First and second terms. Credit three hours a term. Open to students who have completed course 111, who have met the farm-practice requirements, and whose progress in the prescribed courses in agriculture is adequate. Lectures, T Th 8. Caldwell 282. Conferences by appointment. Laboratory, not less than a one half-day period a week in directed teaching. Professor STEWART and Mr. HOSKINS.

A course based upon the activities of the teacher of agriculture in the secondary school, and including practice and directed teaching. Principles of teaching are evaluated in the light of the situations in which they take their rise. Special consideration is given to such problems as: the purposes of instruction, determination of courses of study and the making of curricula, the selection of methods of teaching, the setting up of teaching situations, and the evaluation of results.

133. **Directed Teaching in Agriculture.** First or second term. Credit from one to three hours, amount to be determined by work done. Open only to those who have taken, or are taking, course 131. Students planning to take this course should arrange with the instructor in advance of registration dates. Professor STEWART and Mr. HOSKINS.

Designed to give opportunity to persons preparing to teach agriculture, additional guidance and practice in the organization and conduct of teaching.

135. **The Teaching of Home Economics in the High School.** Second term. Credit three hours. Must be accompanied or preceded by course 121 or the equivalent. Should be taken by juniors. Lectures, T Th 8. Home Economics Building 100. Laboratory, T or Th 2–4.30. Caldwell 100. Acting Professor CONLEY.

This course is concerned with modern methods of teaching as related to the field of home economics. Problems treated: types and purposes of homemaking courses; the needs and native interests of the high-school girl, and the project as one means of meeting these needs; the socialized curriculum; the socialized class hour and assignment; supervised study; the plant and equipment; textbooks; the school lunch; the relation of the home economics department to the school and to the community. A one-day excursion is part of the course.

136. **Directed Teaching in Home Economics.** First or second term. Credit two to five hours, amount to be determined by work done. Open to students preparing to teach home economics. Students planning to take this course should arrange with the department during the junior year. General conferences, S 8–10. Caldwell 282. Acting Professor CONLEY and Misses BULL and HASTIE.

This course is designed to give students opportunity for observation and teaching under the guidance of the department. A week-end trip for the purpose of studying equipment is a part of the course.

[137. **Methods of Extension Teaching in Agriculture.** Second term. Credit two hours. Open to seniors and graduate students. Prerequisite, course 111 or its equivalent. Professor EATON.] Not given in 1927–28.

A study of methods of group and individual teaching appropriate to the work of county agricultural agents and junior project leaders.

[138. **Methods of Extension Teaching in Home Economics.** Second term. Credit two hours. Prerequisite, course 111 or its equivalent. Professor EATON and Assistant Professor MORTON. (See Extension 100, College of Home Economics.)] Not given in 1927–28.

A study, with observation and practice, of methods of teaching appropriate to the work of home demonstration agents and junior club agents.

239. **Problems of Extension Teaching.** Second term. Credit three hours. Open to graduate students who have completed course 211a or its equivalent, and who have had teaching experience or extension experience in agriculture or home economics; open also to graduate students or seniors who have completed Extension Teaching 103 and Rural Education 137, or Extension 100 (Home Economics) and Rural Education 138. Observation of extension teaching as opportunity permits is expected of all students. T Th 11–12.30. Caldwell 282. Professor EATON.

A study of aims, functions, and methods of extension work in their broader aspects.

[240. **Seminary in Problems of Extension Work.** First term. Credit two hours. Professor EATON and members of the Extension staff.] Not given in 1927–28.

PREPARATION OF TEACHERS FOR NORMAL SCHOOLS AND COLLEGES

241. **The Preparation of Teachers for Normal Schools and Colleges.** Second term. Credit three hours. M W F 10. Caldwell 282. Professor BUTTERWORTH.

To meet the needs of those now responsible for the training of teachers in rural elementary and secondary schools or who are preparing for such duties in normal schools and universities.

243. **Teaching in the Land-Grant College.** Second term. Credit three hours. Open to graduate students and members of the staff who have completed course 211a or course 211b or their equivalents. M W 11–12.30. Caldwell 282. Professor EATON.

A study of methods in classroom, laboratory, and field teaching appropriate to the objectives of resident teaching in the college; in so far as time permits there will also be undertaken a study of course organization.

245. **College Preparation of Teachers of Agriculture for Departments in Secondary Schools.** Second term. Credit three hours. Open to graduate students of approved qualifications. M W F 2. Caldwell 492. Professor EATON.

A study of the organization of preparatory systems in the Land-Grant colleges for prospective teachers of agriculture in vocational departments of secondary schools.

248. **The Preparation of Teachers of Home Economics.** First term. Credit three hours. Open to graduate students only. Lectures, T Th S 10. Caldwell 294. Acting Professor Conley.

This course is designed to meet the needs of persons who have had both technical preparation in home economics and teaching experience, and who desire to prepare for the special problems involved in the professional work of preparing teachers of home-economics subjects on a vocational basis. It treats of collegiate and secondary curricula in home economics with reference to the technical preparation of teachers, their professional needs, supervised teaching experience, and the organization and content of special-methods courses in home economics.

250. **Seminary in Agricultural Education.** Second term. Credit two hours. Open only to graduate students in agricultural education who have had courses 245 and 267. W 4–5.30. Caldwell 143. Professor ————.

EDUCATIONAL MEASUREMENT

251. **Mental and Educational Measurement.** Second term. Credit three hours. Prerequisite, permission to register. Primarily for graduate students. Lectures, F S 11–12.30. Caldwell 282. Assistant Professor BAYNE.

Mental and educational measurement in relation to the classification of pupils, determination of the progress of pupils, and individual difficulties. The determination of final marks will be treated. Typical tests and scales, and common statistical terms and methods will be studied in relation to the above problems.

252. **Conferences on Statistical Methods.** Throughout the year. Credit may be arranged. Designed primarily for students of education. By appointment. Caldwell 225. Assistant Professor BAYNE.

253. **Statistics for Students of Education.** First term. Credit two hours. Primarily for graduate students in education. T Th 2–3.30. Caldwell 225. Assistant Professor BAYNE.

A study of common statistical procedures in relation to critical reading of technical studies in education, to carrying on of research, and to writing reports of studies. Emphasis is placed upon an understanding of the appropriate use of statistical procedures rather than upon skill in computation of statistical measures. As far as possible the work is related to the problems of the individual student.

EDUCATIONAL ADMINISTRATION AND SUPERVISION

161. **Principles of School Administration and Supervision.** First term. Credit three hours. Open to advanced undergraduates and to graduate students without administrative experience. M W F 9. Caldwell 282. Professor BUTTERWORTH.

An introductory course covering the general problems of the field: types of school units; state and county organization; functions of boards of education; selection, promotion, and tenure of teachers; training teachers in service; pupil accounting; the school building; curriculum reconstruction; financing the school system; and the like.

261. **The Administration of Rural Schools.** First term. Credit three hours. T Th 11–12.30. Caldwell 282. Professor BUTTERWORTH.

A course for students of experience dealing with the problems of organizing and administering education in country and village districts.

262. **Special Problems in School Administration.** This course is divided into units in such a manner as to include the major problems of the school administrator.

A. **School Finance.** Second term. Credit two hours. T Th 9. Caldwell 282. Professor BUTTERWORTH.

A study of sources of school funds; relation of school revenues to wealth; types of equalization funds; methods of distributing such funds; cost accounting; budget making; and the organization of school taxation.

[B. **The School Population.** Second term. Professor BUTTERWORTH.] Not given in 1927–28.

[C. **The School Plant.** Second term. Credit two hours. Professor BUTTERWORTH.] Not given in 1927–28.

263. **Procedures and Technique in Supervision.** First term. Credit three hours. Lectures, M W F 10. Caldwell 282. Professor MOORE.

The purpose of this course is to assist graduate students of experience to improve their supervisory procedures and techniques. The course includes a survey of the literature related to supervisory problems and an evaluation of the theories and practice involved. Schools are visited and procedures are observed from the viewpoint of the supervisor.

264. **Seminary in Rural School Administration.** Second term. Credit two hours. T 4.30. Caldwell 294. Professor BUTTERWORTH.

Designed for those desiring to make an intensive study of rural-school administration. The school survey is emphasized this year.

267. **Administration and Supervision of Vocational Agriculture.** First term. Credit three hours. Open to graduate students only. M W F 10. Caldwell 143. Professor STEWART.

A course designed for persons fitting themselves for supervision of agricultural education. Topics treated: administration and supervision of agricultural education under the Federal Vocational Education Act; state organization for conduct of vocational education; curricula; supervision and a comparative study of types of schools. School visitation is a required part of the course.

269. **The Administration and Supervision of Home Economics.** Second term. Credit three hours. Open to graduate students only. Lectures, T Th 10. Home Economics Building 400. Laboratory to be arranged. Acting Professor CONLEY.

This course is intended for supervisors and for teachers who are preparing for supervisory positions in the field of home economics. The course is concerned with the analysis of the supervisor's job and with methods of supervision. Among the problems presented for study and investigation will be the organization and the administration of homemaking departments; principles underlying the present day changes in home-economics education; principles underlying the organization of courses; evaluation of teaching; improvement of teachers in service; teachers' conferences and study classes.

276. **Principles of Curriculum Building.** Second term. Credit three hours. For graduate students only. Lectures, T Th 2–3.30. Caldwell 143. Professor FERRISS.

A discussion of the major problems of curriculum content and organization in elementary and secondary schools, with particular reference to rural conditions.

[277. **Courses of Study and Systems of Farm Practice in Agriculture for Secondary Schools.** First term. Credit three hours. Open to graduate students of agricultural education who have had courses 245 and 267 or their equivalents. Professor EATON.] Not given in 1927–28.

A study of the making of vocational courses in agriculture for secondary schools and their correlation with supervised farm studies.

Secondary Education

281. **Rural Secondary Education.** First term. Credit four hours. Designed primarily for graduate students. Lectures, M W F 9, and a period to be arranged. Fernow 118. Professor Ferriss.

A course to consider some of the more basic problems in the nature, organization, curriculum, and extension of secondary education in its adaptation to rural needs. Among the topics treated are: the functions of rural secondary education; present demands upon the rural secondary school; the problems of curriculum building and subject matter; a comparative study of existing types of curricula and courses of study; prevocational and vocational work; pupil guidance, the rural secondary school and the adult.

185. **The Rural and Village Principalships.** Second term. Credit two hours. Given in alternate years. Open to graduate students by special permission. T Th 11. Caldwell 143. Professor Ferriss.

A course designed primarily for those preparing to be principals of schools containing both the high school and the elementary grades. Attention is given to the needs of those combining the work of principal and teacher of agriculture.

288. **Seminary in Rural Secondary Education.** Second term. Credit two hours. Hours to be arranged. Professor Ferriss.

Philosophy of Education

191. **Principles of Education.** Second term. Credit three hours. Open to juniors and seniors who have completed course 111. Students preparing to teach home economics should take this course. Section 1, M W F 11, Caldwell 100; section 2, M W F 8, Roberts 292. Professor Moore.

A consideration of fundamental principles of education with special attention to the needs of prospective teachers in the high school.

292. **Introduction to Philosophy of Education.** First term. Credit three hours. Prerequisites, course 211a and one year of graduate study. M W 2–3.30. Caldwell 143. Professor Stewart.

A critical treatment of the modern views of education, particularly as they relate to the school; and an interpretation of the means and methods of education which these views imply, particularly as observed in the development of a science of education.

[294. **Education and Vocations.** Second term. Credit three hours. Open to seniors and graduate students who have completed course 111 or its equivalent and a course in principles of economics. Professor Eaton.] Not given in 1927–28.

A study of the character of vocations and the organization of economic society in their bearings upon the aims and functions of education in a democracy.

Nature Study

[6. **Field Nature Study.** First term. Credit one hour. Professor Palmer]. Not given in 1927–28.

This course is designed to meet the needs of rural- and other elementary-school teachers, high-school teachers of science, camp councilors and directors, leaders in scout organizations, and junior project workers who wish instruction based on field work.

7. **Nature Study.** Second term. Credit three hours. Prerequisite, one-half year of botany, biology, or zoology. Lecture, M 12. Fernow 16. Practical exercises, M W 2–4.30, and T Th 2–4.30. Professor Palmer.

Laboratory and field practice with those subjects in plant and animal life that are most suitable for nature study in the elementary schools. Special attention is given to the methods of study, manner of presentation, and relation of the topics to agriculture. A study of the history of the nature-study movement and of present-day practices in nature study is made. The New York State Nature

Study Syllabus and the correlation of nature study with other subjects are given consideration.

109. **The Nature-Study Movement and Its Makers.** First term. Credit two hours. Prerequisite, courses 111, 121, and 7. Will alternate with course 6, beginning 1927. M W 10. Fernow 16. Professor PALMER.

Discussions of the history of the nature movement, with consideration of the contributions made to it and to elementary school methods by administrators, educators, scientists, dramatists, and writers of prose, poetry, and fiction. The graded courses in nature study outlines for various States are considered, to assist in the perfection of similar work in the public schools in New York State.

299. **General Seminary in Rural Education.** First term. Credit one hour. Required of all graduate students majoring in rural education. Th 4.30. Caldwell 282. Professor BUTTERWORTH.

RURAL ENGINEERING

1. **Farm Mechanics.** First or second term. Credit three hours. Planned primarily for the general student who wishes to get basic training for understanding the farm applications of mechanical and electrical methods and appliances. Reasonable proficiency in drawing is necessary, and Drawing 1 is recommended as preparation for this course. Lectures, T Th 10. Dairy Building 119. Practice, M or T 2–5. Rural Engineering Laboratories. Professor RILEY and Mr. WRIGHT.

A course intended to develop ability to think and to reason in terms of mechanical and electrical devices, the machines used for this purpose being types of mowers, binders, single-cylinder gas engines, pumps, spray machinery, water supply systems, and electrical equipment. Laboratory fee, $2.

[102. **Farm Power Machinery.** Second term. Credit three hours. Prerequisite, course 1 and Drawing 1, or reasonable and approved proficiency in drawing, and permission to register. Lectures, W F 8. Dairy Building 218. Practice, Th or F 2–5. Rural Engineering Laboratories. Assistant Professor FAIRBANKS and Mr. WRIGHT.] Not given in 1927–28.

A study of automobiles, multicylinder gas engines, electric-light plants, tractors, and tractor plows. There will be one one-day field trip during the term. Laboratory fee, $5.

10. **Household Mechanics.** Second term. Credit three hours. For women students. Lectures, T Th 12. Caldwell 143. Practice, F 10–1, F 2–5, or S 10–1. Rural Engineering Laboratories. Professor ROBB.

A course intended to develop ability to think and to reason in terms of mechanical devices. Among the problems selected for this training are exercises in plumbing, soldering, power transmission, and studies in the principles of operation, care, and repair of small mechanical devices, sewing machines, domestic electrical equipment, and automobile engines. Laboratory fee, $1.

21. **Farm Engineering.** First or second term. Credit three hours. It is recommended but not required that students have training in mechanical drawing. Lectures: first term, M W 9; second term, M W 10, Marketing Building. Practice, M or T 2–5. Dairy Building, Fourth Floor, and field. Professors ROBB and MCCURDY.

A study of the practical solution of the elementary problems involved in connection with surveying and mapping the farm; leveling for farm drainage and water supply; laying out building foundations. Farm sanitation and sewage disposal are studied. Attention is given to concrete construction, including the design of simple concrete structures and estimates of their cost. Laboratory fee, $2.

121. **Farm Engineering, Advanced Course.** First term. Credit three hours. Prerequisite, course 21 or its equivalent. Lecture, T 9. Marketing Building. Field work, S 8–1. Professor MCCURDY.

A course in topographic surveying and mapping; leveling, including cross-section and earthwork computations; a study of the use and adjustments of the better class of levels and the transit.

122. **Drainage.** Second term. Credit two hours. Prerequisite, course 21 and Agronomy 1 or their equivalent. Lecture, M 11. Dairy Building 120. Practice, Th 2–5. Dairy Building, Fourth Floor, and field. Professors ROBB and MCCURDY.

A course covering the principles and practice of drainage. Laying out drainage systems, calculating grades, size of open drains and size of tile drains. A study of the drainage systems on the College and other near-by farms. One two-day excursion to drainage projects at some distance from Ithaca will be taken some time in May. Laboratory fee, $1.

24. **Farm Concrete.** First term. Credit two hours. Lecture, T 11. Marketing Building. Practice, W or Th 2–5. Rural Engineering Laboratories. Professor MCCURDY.

A study of the selection, testing, and proportioning of the materials used in making concrete. Building forms, mixing, placing, finishing, and curing concrete. Waterproofing. Inspection of local sand and gravel banks and of some local concrete structures. Laboratory fee, $1.

31. **Farm Structures.** First or second term. Credit three hours. Laboratory periods, T Th, 10–11, and three two-hour practice periods by appointment. Dairy Building, Fourth Floor. Assistant Professor REYNA.

A study of the principles of design, including lighting, ventilation, sanitation, equipment, floor spacing, and construction, for barns, stables, and other farm buildings, and the application of those principles in the drafting room. Laboratory fee, 50 cents.

131. **Farm Structures, Advanced Course.** First or second term. Credit two or three hours. Prerequisite, course 31. Laboratory periods, T Th 10–11, and two or three two-hour practice periods by appointment. Dairy Building, Fourth Floor. Assistant Professor REYNA.

A study of the practical design of any major farm building other than that designed in course 31. Preparation of specifications and bills of materials. Study of strength of materials.

41. **Farm Shop Work.** First or second term. Credit three hours. Planned for prospective high-school teachers of agriculture. Lecture, S 8. Practice, W 2–4.30 and S 9–1. Rural Engineering Laboratories. Mr. BROKAW.

Practice in woodworking, carpentry, saw filing, tool sharpening, fitting of handles, window repairing, painting, and study of builders' hardware. Study is made of the farm shop and the selection, care, and use of the tools necessary for farm construction and general repair work. Laboratory fee, $3.

42. **Farm Shop Work.** First or second term. Credit two hours. Planned for prospective teachers of agriculture. Lecture and practice, Th 2–5, and any two hours, F between 9 and 12. Rural Engineering Laboratories. Mr. BROKAW.

Practice in harness repairing, soldering, cold-metal working including drilling, tapping, threading, hack sawing, filing, and riveting, and hot-metal working including certain forging operations and the shaping and tempering of tools. The course also includes rope work, visits to farms and schools to ascertain farm shop needs, and the making of an inventory of the equipment on some farm. Laboratory fee, $3.

43. **Farm Shop Work.** First or second term. Credit two hours. Similar to course 41 but open to students generally. Drawing 1 is recommended as preparation. Lecture and practice, W 2–5 and any two hours, Th between 9 and 12. Rural Engineering Laboratories. Mr. BROKAW. Laboratory fee, $3.

44. **Farm Shop Work.** First or second term. Credit two hours. Similar to course 42 but open to students generally. Lecture and practice, F 2–5, and any two hours, F between 9 and 12. Rural Engineering Laboratories. Mr. BROKAW. Laboratory fee, $3.

47. **Farm Blacksmithing.** First or second term. Credit one hour. Freshmen must obtain permission to register from the Farriery office. Practice, M or T 2–4.30. Farriery, Veterinary College. Professor ASMUS.

Welding of iron and ordinary steel such as is used in the parts of modern farm machinery; sharpening, shaping, and tempering of steel tools; miscellaneous forg-

ings, such as chain hooks, links, and so forth; and horseshoeing for those interested and competent. Laboratory fee, $3.

48. **Advanced Farm Blacksmithing.** First or second term. Credit one or two hours. Prerequisite, course 47 and permission to register. Practice, W 2–4.30. Farriery, Veterinary College. Professor ASMUS.

Advanced work in forging and horseshoeing. Laboratory fee, $3 for each credit hour.

251. **Research in Rural Engineering.** First or second term. Credit one or more hours. Prerequisite, adequate ability and training for the work proposed, and permission to register. Professors and Assistant Professors of the department.

Special work in any branch of rural engineering on problems under investigation by the department or of special interest to the student, provided, in the latter case, that adequate facilities can be obtained.

Drawing. The courses in mechanical drawing formerly listed here are now to be found under the heading Drawing.

COURSES FOR STUDENTS IN HOTEL ADMINISTRATION

161. **Mechanism of Hotel Machines.** First term. Credit four hours. Open to juniors. Required of students in hotel administration. Prerequisite, Drawing 2 and Physics 3 and 4. Lectures and recitations, M W F 11. Roberts 292. Laboratory, to be assigned at the time of registration, T Th or F 2–5. East Roberts 1. Assistant Professor RANDOLPH and Mr. ————.

A study of the elements of machines as employed in the mechanical equipment of hotels. Kitchen and laundry machinery, vacuum cleaners, the machine and repair shop, communication systems, plumbing, illumination, and fire protection. A study of graphical representation is included. Laboratory fee, $5.

162. **Hotel Power Plants.** Second term. Credit three hours. Open to juniors. Required of students in hotel administration. Prerequisite, course 161. Lectures and recitations, W F 8. East Roberts 232. Laboratory, W Th or F 2–5. East Roberts 2. Assistant Professor RANDOLPH.

Representative types of steam boilers and their auxiliaries; properties of steam, fuels, combustion, firing methods, feed-water purification, and boiler testing. Various types of steam engines; lubrication; pumps and their applications. Testing of apparatus. Laboratory fee, $5.

163. **Hotel Auxiliary Equipment.** First term. Credit three hours. Open to juniors and seniors. Required of students in hotel administration. Prerequisite, course 162. Lectures and recitations, W F 8. Roberts 292. Laboratory, M or W 2–5, or S 9–12. East Roberts 2. Assistant Professor RANDOLPH.

Electrical machinery, motors, and generators; elevators, electric and hydraulic; heating and ventilation; mechanical refrigeration systems. Laboratory fee, $5.

164. **Hotel Engineering Problems.** Second term. Credit three hours. Open to a limited number of seniors with the consent of the instructor. Prerequisite, course 163. Class discussion, hours to be arranged. Assistant Professor RANDOLPH.

Typical procedure in building construction. Planning the layout for a proposed hotel, emphasizing floor plans and the selection and arrangement of the engineering equipment in the various departments. The use of metering devices in promoting efficient operation.

RURAL SOCIAL ORGANIZATION

11. **The Rural Community.** First term. Credit three hours. Lectures, reports, and discussions, T Th S 10. Fernow 210. Mr. WAKELEY.

An introductory study of the social problems of rural communities as a basis for the social organization of rural life. Some of the problems considered concern health, standards of life, education, religion, the family, recreation, government and community organization. Students make individual studies of selected communities.

12. **Rural Sociology.** Second term. Credit three hours. Lectures and discussions, T Th S 11. Roberts 292. Acting Professor MELVIN.

A study of the structure and function of the groups composing rural society, including associations and communities and their institutions, and the social processes involved in their origin and development.

21. **Introduction to Sociology.** Second term. Credit three hours. Lectures and discussions, T Th S 10. Marketing Building. Acting Professor MELVIN.

A study of the structure and function of the various types of human associations and social processes in both urban and rural society. This course should precede all other courses in this department as far as is possible.

22. **The Family.** First term. Credit three hours. Lectures and discussions, T Th S 11. Roberts 292. Professor SANDERSON.

This course considers the social problems of the family both on the farm and in the city; the history of the family, particularly during the past century; the differences between family life in the country and in the city; the function of the family in society; marriage and divorce; relations of parents and children; and how the family may be conserved.

111. **Rural Community Organization.** Second term. Credit three hours. Prerequisite, courses 11, 12, or21, or Economics 50a, or the equivalent. Lectures, discussions, and demonstrations, M W F 11. Marketing Building. Professor FELTON.

The aim of this course is to train students in the technique of organizing rural communities. Typical communities are studied, their problems are analyzed, and a method of organization is discussed. The program of the grange, the farm and home bureaus, the church, farmers' clubs, cooperatives, and other social institutions are studied in relation to a unified community program. Emphasis is placed upon unifying the program of the various social organizations into effective community service.

112. **Organizations for Boys and Girls.** Second term. Credit three hours. Prerequisite, course 11, 12, or 21, or Economics 50a, or the equivalent. Lectures, reports, and discussions, M W F 10. Fernow 210. Professor FELTON.

A study of the aims and methods of organizations of groups of boys and girls. The principles and procedure underlying the organization and conduct of groups and clubs such as 4-H Clubs, Boy Scouts, Girl Scouts, Camp Fire Girls, Y. M. C. A. and Y. W. C. A., Juvenile Granges, and organized church groups. The leisure-time activities of farm boys and girls, and the practical methods for group leaders are considered.

113. **Field Work in Rural Society.** Throughout the year. Open only to advanced students by special permission. All work is individual. Hours and credit to be arranged. Professor SANDERSON and Acting Professor MELVIN.

131. **The Social Psychology of Rural Life.** Second term. Credit three hours. For advanced students. Prerequisite, course 21 or Economics 50a, one or more courses in psychology, and permission to register. T Th S 10. Fernow 210. Assistant Professor NAFE.

This course deals with the psychological development of the individual as a member of society, the sociological development and the actions of groups, and the relation of these two. General principles are drawn and applied from specific examples. This course seeks to ascertain how these principles may be used in the rational direction of group life. This is done by an analysis of how group action produces specific results. The dominating rural mores, folkways, and attitudes which arise from the vocation of agriculture and of different types of agriculture and the activities of rural organizations, are given special attention.

132. **Rural Leadership.** Second term. Credit two hours. Prerequisite, permission to register. W 2–4. Roberts 92. Assistant Professor NAFE.

A seminary course for the study of the psychology of rural leadership and the means of discovering and developing local leadership.

[211. **The Rural Community.** Credit two hours. Primarily for graduate students. Prerequisite, course 11 or 12 and general sociology, or their equivalent. Professor SANDERSON.] Not given in 1927–28.

A detailed study of the nature of the rural community, its historical development; a comparative study of types of rural communities; their social psychology and the methods of community development and organization.

212. **The Village.** Second term. Credit two hours. Prerequisite, permission to register. Lecture, T 2. Laboratory and reports, Th 2–4. East Roberts 232. Acting Professor MELVIN.

This course considers the structure and function of the village, including its historical development in the United States. The relation of the village to the city, to the town, and to the farm is analyzed. Emphasis is also placed on the social organization of the village as it relates to the community and to community organization. Students are given an opportunity to work on individual problems with respect to the village.

213. **Research in Rural Social Organization.** Throughout the year. For graduate students only. Hours and credit to be arranged. Professor SANDERSON and Acting Professor MELVIN.

214. **Seminary.** First term. For graduate students. W 3–5. Roberts 92. Professor SANDERSON.

A survey of the development of teaching and research in rural sociology in the United States.

221. **Sociological Theory.** First term. Credit three hours. Prerequisite, permission to register. T 2–4, Roberts 92; Th 2–4, East Roberts 232. Professor SANDERSON.

A seminary course devoted to the critical analysis of recent and contemporary sociological theory.

VEGETABLE GARDENING

1. **Vegetable Crops.** Second term. Credit three hours. Assignment to laboratory section must be made at time of registration. Lectures, M W 11. Poultry Building 174. Laboratory, W or F 2–4.30. Vegetable greenhouses and East Ithaca gardens. Assistant Professor SCHNECK.

A general study of the principles of vegetable growing and handling, giving a comprehensive survey of the industry. This course is intended for the student who desires a brief course and as an introductory course for the student who wishes to specialize in commercial vegetable growing. Lectures and laboratories consider the history, the economic importance, the cultural requirements, and the marketing, storage, and uses, of the important vegetables. Laboratory fee, $2.

101. **Vegetable Crops, Advanced Course.** Second term. Credit three hours. Prerequisite, course 1. Lectures, T Th 9. Poultry Building 174. One conference period, to be arranged. Professor THOMPSON.

A systematic study of research results in vegetable production and handling, and their application to the solution of practical problems.

2. **Special Crops.** Second term. Credit three hours. Prerequisite Botany 1; Agronomy 1 may well precede or accompany this course. Lectures, T Th 11. Laboratory, Th or F 2–4.30. Poultry Building 174. Professor HARDENBURG.

A special study of those crops which are grown in New York State principally as cash crops for the wholesale market and for manufacture, including potatoes, field beans, field cabbage, and the important canning crops, peas, tomatoes, sweet corn, and snap beans. About one-third of the term's work is devoted to potatoes. Laboratory work includes a study of types, varieties, diseases and insects, and market relationships, of these crops. A short trip to visit near-by bean elevators will be required, for which the expense need not exceed $2. Laboratory fee, $2.

[11. **Vegetable Forcing.** First term. Credit three hours. Prerequisite, course 1. Assistant Professor SCHNECK.] Not given in 1927–28.

Growing vegetables under glass; greenhouses for vegetables; management problems; the greenhouse crops, their requirements and culture. Laboratory work will consist chiefly of practical exercises in crop production. The class will participate in a required one- or two-day excursion to Rochester, in January, to visit greenhouses; cost, about $9. Laboratory fee, $2.

12. **Grading and Handling Vegetable Crops.** First term. Credit three hours. Lectures, T Th 10. Poultry Building 174. Laboratory, Th or F 2–4.30. Professor THOMPSON and Assistant Professor SCHNECK.

Geography of vegetable production and distribution, factors of environment, culture, and handling as affecting quality, condition, and marketing of vegetable crops, are considered. Harvesting, grades and grading, packing, shipping-point and terminal-market inspection, transportation, refrigeration, and storage are discussed with reference to the various crops. One all-day trip will be made; approximate cost, $10. Laboratory fee, $2.

112. **Systematic Vegetable Crops.** First term. Credit three hours. Prerequisite, course 1. One week of laboratory work preceding beginning of regular instruction (September 22–28, 1927) at East Ithaca gardens. Lecture, Th 8. Poultry Building 174. Laboratory, S 10.30–1. East Ithaca gardens. Professor WORK.

This course deals with the taxonomy, origin, history, characteristics, adaptation, identification, classification, exhibition and judging of kinds, varieties, and strains of vegetables. Attention is also given the characteristics, production, and handling of vegetable seed. The leading varieties of the vegetable crops are grown each year. The value of the course depends to a great extent upon gaining an actual acquaintance with the plant material as it grows. For this reason, part of the laboratory work is done in the gardens prior to and during registration week. Students expecting to take the course will report at the East Ithaca gardens Thursday, September 22, at 9 a. m. prepared to spend five full days in field study. Laboratory fee, $2.

221. **Research.** Throughout the year. Credit three or more hours a term. For graduate students only. Hours by appointment. Poultry Building. Students will usually be required to remain during at least one summer in order to work out experimental problems. Professors THOMPSON, WORK, and HARDENBURG, and Assistant Professor SCHNECK.

222. **Seminary.** First and second terms. Required of graduate students taking either a major or a minor in this department. Time to be arranged. Poultry Building 174. Members of department staff.

WILD-LIFE CONSERVATION AND GAME FARMING

1. **The Conservation of Wild Life.** First term. Credit two hours. Lectures, T Th 11. McGraw 5. Professors NEEDHAM, HOSMER, WIEGAND, BRISTOW ADAMS, EMBODY, A. H. WRIGHT, and A. A. ALLEN, and cooperating specialists.

This is an introductory lecture course given cooperatively by specialists within and without the College. It is intended to show the relations of the various conservation interests to one another, and to give the student who plans to fit himself for work in game farming, ornithology, fish culture, or other lines of conservation, a general view of the field and a basis for the selection of subsequent elective courses.

ZOOLOGY

1. **General Zoology.** First and second terms. Credit three hours a term. Two lectures and one laboratory period weekly. Lectures: section 1, T Th 9; section 2, T Th 11. Goldwin Smith B. Laboratory, M T W or F 2–4.30, or S 8–10.30. McGraw 2. Registration with the department before instruction begins is necessary for the assignment of laboratory and lecture sections. Professor REED, Assistant Professor YOUNG, and Misses MEKEEL, MCMULLEN, and PHELPS.

A comprehensive view of the subject, including the fundamentals of animal biology, the principles of structural and functional organization in the animal body, the origin and perfection of animal life, and a consideration of those generalizations in zoological theory which seem to be the best founded. Laboratory fee, $3.50 a term.

8. **Elementary Taxonomy and Natural History of Vertebrates.** First and second term. Credit three hours a term. Lecture, M 8. Laboratory, T or W, 2–4.30, and one period by appointment. McGraw 7. Professor WRIGHT and Mr. GREELEY.

Lectures on fishes, amphibians, reptiles, birds, and mammals, dealing with the principles of classification and nomenclature, characteristics, relationships, and bionomics of these groups. The laboratory gives practice in the identification of North American species. Field studies of the local fauna are undertaken during the fall and spring. Laboratory fee, $4.

Students completing this course may arrange under Animal Biology 99 to pursue advanced work in taxonomy of vertebrates.

9. **Field Ornithology.** Second term. Credit three hours. Lecture, M W 11. McGraw 5. Field work and laboratory, T Th 2–4.30, or M W 2–4.30. Professor A. A. ALLEN and Messrs. FUERTES and PIRNIE.

This course is intended primarily for students wishing to gain a knowledge of local birds, their habits, songs, nests, and eggs, their relation to agriculture, and the general principles of their conservation. Field work is supplemented by laboratory studies. After the first of May, field trips will be taken at 5.30 a. m. Laboratory fee, $2.

22. **Ichthyology, Advanced Systematic and Field Zoology.** Second term. Credit three hours. Lectures, T Th 8. McGraw 7. Laboratory, F 2–4.30 or S 8–10.30. Professor WRIGHT and Mr. GREELEY.

An amplification of the prerequisite course 8. In the lectures, special emphasis is laid on the principal phases of animal life; the taxonomy, origin, and evolution of fossil and living groups; geographical distribution; and the literature and institutions of zoology. Laboratory periods are devoted to the identification of exotic and indigenous forms.

[23. **Herpetology (Amphibia).** First term. Credit three hours. Professor WRIGHT and Mr. GREELEY.] Not given in 1927–28.

[24. **Herpetology (Reptilia).** Second term. Credit three hours. See announcement for course 22. Professor WRIGHT and Mr. GREELEY.] Not given in 1927–28.

25. **Mammalogy.** First term. Credit three hours. See announcement for course 22. Professor WRIGHT and Mr. GREELEY.

67. **Seminary in Systematic Vertebrate Zoology.** First and second terms. Credit one hour a term. Hours to be arranged. Professor WRIGHT.

Life-zone plans of North America, 1817–1920. Distribution and origin of life in North America. Zoogeography of the Old World. Animal coloration. Other topics to be announced.

126. **Advanced Ornithology.** First term. Credit three hours. Prerequisite, course 8 or 9. Lecture, W 11. McGraw, South Museum. Laboratory and field work, T Th 2–4.30. Professor A. A. ALLEN and Mr. PIRNIE.

A consideration of the birds of the world. The lectures take up the structure and classification of birds; geographical distribution; the literature and institutions of ornithology. Laboratory periods are devoted to the identification of skins of native and foreign representatives of the different families of birds. The first part of the term is devoted to field work on the fall migration, and the identification of birds in winter plumage. Laboratory fee, $2.

[131. **Economic Ornithology and Mammalogy.** First term. Credit three hours. Should be preceded by course 8 or 9; presupposes an elementary knowledge of botany and entomology. Professor A. A. ALLEN and Mr. PIRNIE.] Not given in 1927–28.

This course is designed to assist those planning professional work with birds or mammals. The lectures take up various phases of the life of birds and mammals in relation to agriculture, with the methods of increasing beneficial species and of destroying vermin, together with the elements of game breeding and fur farming. The laboratory gives practice in the identification of game birds, vermin, the food of birds, the preparation of materials, and the making of skins. The field work gives opportunity for observation of feeding habits, field collecting, methods of attracting birds, and natural-history photography. Laboratory fee, $2.

199. **Zoological Problems.** Throughout the year. Credit hours variable. For qualified seniors and juniors. Admission to the course is by consent of the instructor. By appointment. Professors NEEDHAM, HERRICK, JOHANNSEN,

REED, BRADLEY, CROSBY, PHILLIPS, EMBODY, MATHESON, WRIGHT, ALLEN, and CLAASSEN, and Assistant Professor YOUNG.

This course may assume the status of an undergraduate seminar according to the needs and convenience of both teacher and student. Opportunity is afforded for the pursuit of special problems or special phases of zoological study beyond that permitted by the more elementary courses.

EXTENSION WORK

The extension work of the College of Agriculture is designed to help persons directly on their farms, and to aid those who desire definite instruction but who cannot take a long or a regular course in agriculture at the University. The work supplements the teaching and experimenting of the College. It is professedly a popular work. It endeavors to reach the common problems of the people, to quicken the agricultural occupations, and to inspire a greater interest in country life. It is also a bureau of publicity, whereby there is an exchange of all important matters connected with the progress of the agriculture of the State.

The Office of Farm Bureaus is located on the second floor of Roberts Hall. This office represents the New York State Department of Agriculture, the College of Agriculture, and, through the Dean, the States Relations Service in the United States Department of Agriculture, in the administration and supervision of farm-bureau work in New York State. It has general charge of the organization and supervision of farm bureaus and of the cooperative relations of the institutions represented by the bureaus, and receives weekly work reports and monthly financial reports from the different counties. Its equipment consists mainly in files and records of the fifty-five farm bureaus in the State.

WINTER COURSES

The Winter Courses are six in number, all opening on November 9, 1927, and closing on February 17, 1928. They are:

1. Agriculture
2. Dairy Industry.
3. Poultry Husbandry.
4. Fruit Growing.
5. Flower Growing.
6. Vegetable Crops.

A special program describing these courses will be sent on application to Olin W. Smith, Secretary, New York State College of Agriculture, Ithaca, New York.

SUMMER SCHOOL

The Summer School is a six-weeks summer session beginning early in July. It is designed not so much to meet the needs of college students as of teachers, supervisors, superintendents, extension workers, and others professionally concerned with activities of an educational nature.

College students desiring to use the summer for additional study are in general advised to enter the Summer Session in Cornell University rather than the Summer School of Agriculture.

SUMMER SCHOOL OF BIOLOGY

Coincident with the Summer School, there is held a School of Biology for teachers and advanced workers. The work is laid out in comprehensive courses including, unabridged, what is offered in the corresponding courses in a term of the regular academic year. For advanced students there is opportunity for special work under the various members of the staff.

COURSES IN OTHER COLLEGES THAT MAY BE OFFERED TO MEET THE SPECIFIC REQUIREMENTS OF REGULAR STUDENTS IN THE COLLEGE OF AGRICULTURE

1. **English.** First and second terms. Credit three hours a term. Students who have not taken the course in the first term may enter in the second term in sections provided for them. Open only to underclassmen who have satisfied the entrance requirement in English. Sections at the following hours: M W F 8, 9,

10, 11, 12 or T Th S 8, 9, 12. Rooms to be announced. Messrs. BALDWIN, JOHNSON, ELSON, AINSWORTH, BISSELL, and BUCHANAN.

A study of composition in connection with the reading of representative works in English literature.

Students who elect English 1 must apply at Roberts 292 on Monday, Tuesday, or Wednesday, of registration week for assignment to sections. Registration in the course is in charge of Mr. BALDWIN.

101. **Introductory Inorganic Chemistry.** First or second term. Credit three hours. Lectures: two sections, M W F 11 or T Th S 11. Main Lecture Room, Baker. Professor BROWNE and Assistant Professor MCKINNEY.

105. **Introductory Inorganic Chemistry.** First or second term. Credit three hours. Recitation, one hour a week, to be arranged. Laboratory sections, M F 2–4.30; T Th 2–4.30; W 2–4.30, S 8–10.30. Baker 150. Professor BROWNE, Assistant Professor MCKINNEY, and assistants.

Chemistry 101 and 105 must be taken simultaneously unless permission is obtained by the student from the Dean of his college and from the Department of Chemistry to take either course alone.

100. **Introductory Geology.** First or second term. Credit three hours. Lectures: first term, T Th 11; second term, T Th 9. Sibley Dome. Laboratory, M T W Th or F afternoon, or S morning. McGraw. Students must register for laboratory assignment at geology laboratory, McGraw, before the beginning of the course. Professor RIES, Miss ST. JOHN, and Messrs. BURFOOT and STOW.

This course is planned to give beginners the fundamental principles of this branch of science. The inorganic aspects of the subject are emphasized more than the organic.

200. **Elementary Physical Geography.** First and second terms. Credit three hours a term; if taken after course 201, credit two hours a term. Lectures, M W 9. McGraw, Geology Lecture Room. Laboratory, W or Th 2–4.30. Students must register for laboratory assignments at the physical geography laboratory on registration day. Professor VON ENGELN and Mr. FRIDLEY.

High-school courses are not the equivalent of this course and will not be so considered as a prerequisite for advanced courses. All students are required to go on one all-day excursion to Taughannock Gorge and Falls.

3. **Introductory Experimental Physics.** First term. Credit three hours. Demonstration lectures and laboratory work covering properties of matter, sound, and light. Lectures, W F 9, or W F 11. Rockefeller A. Professor MERRITT. One two-hour laboratory period a week as arranged. Rockefeller 220. Messrs. BARNES, CARR, FISHER, GOLDSMITH, HIRSH, LARSEN, MARCHANT, NELSON, and THEN.

Courses 3 and 4 form a continuous first course. Course 3 may be taken either before or after course 4.

4. **Introductory Experimental Physics.** Second term. Credit three hours. Demonstration lectures and laboratory work covering heat, magnetism, and electricity. Hours as in Physics 3. Lectures, Assistant Professor HOWE.

10. **The Physiology of the Nutrition and Secretion of the Domesticated Animals.** First or second term. Credit three hours. Lectures, M W F 10. Veterinary College. Professor FISH.

303. **Elementary Human Physiology.** First or second term. Credit three hours. First term, M W F 10. Assistant Professor DYE and assistants; second term, section A, M W F 10, Assistant Professor LIDDELL and assistants; section B, M W F 12. Mr. MAUGHAN, and assistants. Stimson 4.

An introductory course for students of the biological sciences; also for students who expect to teach physiology in secondary schools. The lectures are fully illustrated by experiments, lantern slides, and diagrams.

1. **Modern Economic Society.** First or second term. Credit five hours. Daily except S 8, 9, 10, 11, 12, 2. Professor SLICHTER.

Students should register, if possible, on the first day of registration. Section assignments will be made at Goldwin Smith 260 on registration days. In the first term the registration will be limited in number.

A survey of the existing economic order, its more salient and basic characteristics, and its operation.

1. **Solid Geometry.** First or second term. Credit three hours. First term T Th S 10; second term, M W F 10.

3. **Plane Trigonometry.** First or second term. Credit three hours. First term, M W F 10; second term, T Th S 10.

UNIVERSITY REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE, AND RELATED ELECTIVE COURSES

Hygiene and Preventive Medicine

All undergraduates must submit to a physical examination each year in the University Medical Adviser's office. Appointment for this examination must be made during the regular registration days by all new students and sophomores in the first term and by all juniors and seniors in the second term.

All students in the first two years of the undergraduate courses are required to attend lectures on hygiene and preventive medicine given once a week throughout the college year. The first year (Hygiene 1 and 2) is devoted to personal hygiene, mental hygiene, and first aid. The second year (Hygiene 3 and 4) is devoted to sanitation, disease prevention, and group hygiene.

Men

First Term Schedule:
Hygiene 1—W 11, Th 9, 12, F 9, S 8, 10, 12.
Hygiene 3—M 9, 11, T 9, 11, 12, W 9.
Second Term Schedule:
Hygiene 2—W 11, Th 9, 12, F 9, S 8, 10, 12.
Hygiene 4—M 9, 11, T 9, 11, 12, W 9.

Women

First Term Schedule:
Hygiene 1—Th 10, 11, F 11.
Hygiene 3—M 8, T 10, S 11.
Second Term Schedule:
Hygiene 2—Th 10, 11, F 11.
Hygiene 4—M 8, T 10, S 11.

Military Science and Tactics, and Physical Training

1. **Practical and Theoretical Training.** Throughout the year. Every able-bodied male student (except aliens), a candidate for a baccalaureate degree, who is required to take five, six, seven, eight, or more terms in residence, (or the equivalent in scholastic hours), must take, in addition to the scholastic requirements for the degree, one, two, three, or four terms respectively, in the Department of Military Science and Tactics. Three hours a week, M T W or Th 2.15–5.15 p. m. New York State Drill Hall.

The requirements in Military Science and Tactics must be completed in the first terms of residence; otherwise the student will not be permitted to register again in the University without the consent of the University Faculty.

The course of training is that prescribed by the War Department as basic for infantry and field-artillery units (as elected) of the Reserve Officers' Training Corps. The infantry includes instruction in physical training, disciplinary drills, ceremonies, military courtesy, auxiliary weapons (machine guns, automatic rifles, 37 mm. guns, and trench mortars), indoor and outdoor rifle practice, pistol practice, topography and mapping, tent pitching and camp sanitation, signalling, field engineering, field maneuvers, interior guard duty, and fundamental principles in minor tactics and leadership. The field artillery includes instruction in organization of the battery, customs of the service, military courtesy and discipline, individual equipment, pistol practice, hippology, gunnery, signalling, physical training, equitation and horsemanship, topography and reconnaissance, and motors.

2. **Elective Military Training.** Throughout the year. Credit two hours a term. Hours by assignment. New York State Drill Hall.

This is the advanced course prescribed by the War Department for units of the Reserve Officers' Training Corps, and includes three hours each week in the performance of the duty of officer or non-commissioned officer with organizations undergoing the training given under course 1, and two hours each week of theoretical instruction in preparation for such duties. Prerequisite, course 1.

Course 2 may be elected only by permission of the Dean of the College and the Professor of Military Science and Tactics, and at least the first four hours of registration will be counted in the twenty elective hours allowed outside the College of Agriculture (page 23). To enjoy the benefits offered by the Federal Government the student must agree to continue the course for four terms, and to attend a summer camp having a duration of about six weeks.

1. **Physical Training for Men Excused from Drill (Freshmen).** Throughout the year, three periods a week. Class and squad work and prescribed exercises. Mr. O'CONNELL and assistants.

2. **Physical Training for Men Excused from Drill (Sophomores).** Throughout the year, three periods a week. Class and squad work and prescribed exercises. Mr. O'CONNELL and assistants.

3. **Physical Training for Men (Juniors and Seniors).** Building-up and corrective exercises as prescribed by the medical examiners as a result of the physical examination required of all students in the University. Mr. BURKHOLDER.

4. **Boxing, Wrestling, and Fencing.** Instruction at hours to be arranged. Messrs. FALLON, O'CONNELL, and DARRIELAT.

5. **Swimming.** Instruction, M T W Th F 4–6. Mr. CRAIGIE.

6. **Physical Training for Women (Freshmen).** Throughout the year, three periods a week. Misses BATEMAN, CANFIELD, READ, RYAN, and WATERMAN.

7. **Physical Training for Women (Sophomores).** Throughout the year, three periods a week. Misses BATEMAN, CANFIELD, READ, RYAN, and WATERMAN.

The work of the two years consists of outdoor games and exercises from the beginning of the year to Thanksgiving, and from the Easter vacation to the end of the year. From Thanksgiving to Easter the work is in large part indoors, and consists of floor exercises, folk, aesthetic, and interpretative dancing, and indoor games, in all of which certain prescribed tests must be met at the end of each period.

For further information as to the required work in physical training, see the handbook issued by the department.

8. **Physical Training for Women (Juniors and Seniors).** Building-up and corrective exercises, as prescribed by the medical examiners as a result of the physical examination required of all students in the University. Miss WATERMAN.

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This series of pamphlets is designed to give prospective students and other persons information about Cornell University. No charge is made for the pamphlet unless a price is indicated after its name in the list below. Requests for pamphlets should be addressed to the Secretary of the University at Ithaca. *Money orders should be made payable to* CORNELL UNIVERSITY.

The prospective student should have a copy of the

General Circular of Information

and a copy of one or more of the following Announcements:

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Announcement of the College of Engineering.
Announcement of the Law School.
Announcement of the College of Architecture.
Announcement of the New York State College of Agriculture.
Announcement of the Winter Courses in the College of Agriculture.
Announcement of the New York State College of Home Economics.
Announcement of the New York State Veterinary College.
Announcement of the University Division of Education.
Announcement of the Department of Chemistry.
Announcement of the Graduate School.
Announcement of the Summer Session.
Announcement of the Summer Session of the Law School.
Announcement of the Summer School of Biology.
Program of the Annual Farmers' Week.
Annual Report of the President.

Special departmental announcements, a list of prizes, etc.

Other periodicals are these:

The Register, published annually in September, and containing, not announcements of courses, but a comprehensive record of the University's organization and work during the last year. Price, 50 cents.

Guide to the Campus. Illustrated. Price, 50 cents.

Directory of the University. Price, 10 cents.

The *Announcement of the Medical College* may be obtained by addressing the Cornell University Medical College, Ithaca, New York.

Correspondence regarding the Cornell University Official Publication should be addressed to

THE SECRETARY, CORNELL UNIVERSITY,
ITHACA, NEW YORK.